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ERRATUM.

Journal, Vol. 71, 1910, pp. 330-341. "Varieties of Wheat." In the account of these experiments the variety known as Red Admiral was given as being an English wheat. It has since been ascertained that it was a wheat of French origin but subsequently grown for several years in England. It was supplied, however, from a different source to that from which the other wheats described as French varieties came.

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" 3. 1842 ...	III. " I. (viii), II. (ix), & III. (x).	" 43. 1882 ...	" XVIII. " I. (xxxv) and II. (xxxvi).
" 4. 1843 ...	IV. " I. (xi) and II. (xii).	" 44. 1883 ...	" XIX. " I. (xxxvii) & II. (xxxviii).
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" 10. 1849 ...	X. " I. (xxiii) and II. (xxiv).	" 50. 1889 ...	" XXV. " I. (xlix) and II. (l).
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" 39. 1878 ...	XIV. " I. (xxvii) and II. (xxviii).		
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JOURNAL
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THE COMPOSITION AND FOOD VALUE
OF BREAD.

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Cambridge.*

WHEAT has been a staple article of diet amongst a large proportion of the inhabitants of the world from the earliest times of which information as to the dietary of human beings is available. Primitive man apparently ate his wheat and other cereal grains whole, sometimes even entirely uncooked, but more frequently dried or parched by fire. As civilisation dawned and the practice of preparing and cooking food came into use, primitive mills, somewhat resembling the mortar and pestle of the present-day chemist, were devised. Such mills are still in use in the East. They served to reduce the grains to a more or less coarse powder which could be readily mixed into a paste or dough with water. This dough was shaped into cakes and cooked by baking, no doubt originally into unleavened bread, but in later times, with the addition of yeast, into bread as we understand it to-day.

Such primitive mills produced a wheat meal containing the whole of the grain. They were incapable of attempting any separation of flour and bran, which for the present may be accepted as the two chief components of the wheat grain. As the more civilised peoples acquired more refined habits of feeding, and the mechanical arts advanced, the primitive mortar and pestle mill, by a process of continuous evolution, reached its climax in the mechanically driven millstones which ground the whole of the breadstuffs of the civilised world until about forty years ago.

The stone mill of that date was an instrument of the greatest delicacy and precision, but it had nevertheless its limitations. As long as the wheat with which it had to deal

possessed the soft starchy kernel and thick tough skin of the varieties commonly grown in Great Britain, it could pulverise the flour without unduly tearing the skin, and thus render possible such a separation of bran from flour as the more fastidious tastes of the people of the nineteenth century demanded. But already in 1870 home-grown wheat could supply little more than half the breadstuffs of the population of the United Kingdom. Since that date the population has greatly increased, and the area of land under wheat considerably decreased, so that at the present time four-fifths of the wheat consumed in the United Kingdom is imported from abroad.

Now many of the wheats imported into this country from abroad differ from home-grown wheats in two characters which for the present argument are of the greatest importance. They are much harder, and their skin is much less tough. Consequently, when ground in the stone mills of forty years ago, they yielded a flour which failed to produce bread to suit the public taste. If the stones were set to pulverise sufficiently the hard and horny kernel, then the brittle skin was so severely treated that it could not be efficiently separated as bran, and a dark coloured flour resulted. Such flour was rapidly ousted from the markets by the fine white flours imported from America, where the new process of roller milling had taken root. This process, an entirely new departure in the milling industry, had arisen first in Hungary, as a consequence of the necessity for dealing with the typically hard and thin skinned wheats, produced in that country, in such a manner as to suit the growing fastidiousness in the feeding habits of the people. It was taken up at once by American millers, no doubt for similar reasons, and at once became the prevailing milling process in that country. American millers began to send flour to England which soon proved to be more to the public taste than the darker coloured flours made in stone mills from hard brittle skinned foreign wheats. Under these conditions the imports of flour increased at the expense of the imports of wheat, and this state of things was responsible for two important results. The importation of flour milled in America retained for the cattle feeders of that country a cheap and plentiful supply of concentrated food in the shape of the offals from the rapidly extending and prosperous roller milling industry, and at the same time deprived English graziers of an equivalent amount of raw material. This was a serious handicap to the cattle raising industry of this country in its competition with imported meat. The home milling industry, too, suffered seriously from American competition, and for a time was in a state of great depression.

The millers, however, met the situation with admirable energy and confidence. Capital was subscribed and roller milling plants installed in all the larger mills in the country. Foreign wheats were largely bought, and with modern roller plant, flours were produced from them which suited the public taste as well as, or even better than, imported American flours. The home milling industry soon regained possession of the home flour trade, and wheat offals were again available in quantity and at a reasonable price for the English graziers. The newly introduced roller mills met with progressive economic success, and at the present date practically all the bread consumed by the population of the United Kingdom is the produce of the roller milling process.

The above short outline of the history of the milling industry during the last forty years leads to the obvious conclusion that a complete revolution has taken place in the kind of bread consumed by the people of this country, and, it may be added, of all the more civilised bread eating countries; and this revolution is the result of the invention of the roller mill, which in turn was brought about by the increased production of hard but brittle skinned wheats which, when ground between stones, do not yield a flour which satisfies modern tastes.

Such a radical change in the food of the people is a matter for serious reflection. The question naturally arises—how is it likely to affect the health of the nation? In the following pages it is proposed to discuss all the evidence which can be brought to bear on this point, which is one of national interest and importance, as shown by the comment which it evokes whenever it is periodically revived in the public press.

Those who have followed the question in the public press during the last two years will realise that, like most questions, it has two sides. The food reformers on their side urge that the fine white flour of the roller mills is deficient in nitrogenous substance, and in phosphates, as compared with flour made by stone grinding, or by a modified roller process, which produces what the miller would call a straight grade flour, containing four-fifths of the grain, and rejecting nothing but the coarser bran. The millers, anxious to defend the roller process in which they have sunk so much capital, contend that what their fine white flours lose in the removal of nitrogen and phosphates by their more refined methods of separation is more than compensated for by the greater digestibility of the remainder; that white bread made from high grade flour yields more available energy to the animal economy; and that its very whiteness is a reliable criterion of its freedom

from at any rate the grosser impurities with which foreign wheat is often contaminated. The matter is obviously one of great complexity, and can only be solved by appeal to experimental results.

Before turning to experimental results, however, it may be well, briefly, to discuss the food requirements of an average healthy man. In order that a man may be maintained in a state of health, it is necessary that his heart should beat, that his lungs should expand and contract, that certain secretions should be manufactured, and that certain muscular movements of his digestive organs should take place. In addition to these involuntary actions, it is also desirable that he should perform certain voluntary movements, such as standing, walking, and using his arms, legs, and body in a variety of ways. All these actions, voluntary and involuntary, can only be carried out at the expense of definite amounts of energy, which must be conveyed into the body in the form of food, just as the energy to run a steam engine must be put into the engine in the form of fuel. Now, before a steam engine can convert the energy of its fuel into work, the fuel must be burned to carbon dioxide and water, and the value of any kind of fuel for the purpose of driving a steam engine can be, and is commonly measured, by measuring the number of units of heat, or calories as they are called, which one pound of that fuel can give out when it is burned. In obtaining the energy out of his food, a man slowly burns or oxidises the food to carbon dioxide and water, the same products as those formed in the furnace of a steam engine, and it follows, therefore, that the energy-supplying value of a food can likewise be measured by determining the number of calories given out by burning one pound of it. As the result of many inquiries, both experimental and statistical, it has been decided that a man of average size can maintain his health on a diet which supplies about 3,000 calories or heat units per day. The food, however, must supply something beyond energy. To return once more to the analogy of the steam engine, fuel alone will not keep it going indefinitely. From time to time its working parts will need repair. Coal or other fuels are useless for this purpose. The working parts are made of iron or steel or brass, and they can only be repaired by similar materials. In much the same way, the working parts of the human body continually need repair. These working parts, the muscles, nerves, glands, and so forth, are for the most part composed of nitrogenous substances, classed together under the name protein, and they can only be repaired by the inclusion in the diet of sufficient protein to provide the raw material to make good their waste. It is commonly accepted that the least amount of protein

required daily for this purpose by an average man is 100 grams, or in English weight, about $3\frac{1}{2}$ oz.

Combining these two statements, it is commonly accepted that the standard dietary of a healthy man must provide energy amounting to about 3,000 calories, and must contain about $3\frac{1}{2}$ oz. of protein. These conditions are satisfied by a diet containing $3\frac{1}{2}$ oz. of protein, 500 grams, or rather over 1 lb. of carbohydrate (sugar, starch, and similar substances), and 50 grams, or rather less than 2 oz. of fat. These figures apply to the case of a man of average weight who performs daily a moderate amount of light muscular work. It is necessary to increase them all round if the subject is engaged in heavy work, and they may be decreased if the subject remains practically at rest.

To check these figures, I have used the results of an inquiry as to the average dietary of agricultural labourers in all parts of England, carried out for the Board of Trade by 114 investigators in 1902, and published in Blue Book Cd. 1761, 1903, page 210. From the figures there given I have computed, by the aid of the tables contained in Bulletin No. 28 (revised edition), U.S. Department of Agriculture, pp. 19—77, the amount of protein consumed per day per head, and the energy value, of the daily dietary of an average agricultural labourer. The figures in the first column of Table I. are those

TABLE I.—*Protein and Energy Value of the Average Weekly Dietary of a Farm Labourer's Family.*

Foods used	Weight in oz.	Protein content, oz	Energy value, calories
Meat	53 $\frac{1}{2}$	7.7	4,000
Pork	17 $\frac{1}{2}$	3.0	1,300
Bacon	43 $\frac{1}{2}$	3.5	5,000
Cheese	19 $\frac{1}{2}$	5.0	2,600
Bread	312	32	23,000
Flour	238	31	24,000
Oatmeal	20	2.4	2,200
Rice			
Potatoes	412	9.0	9,600
Butter	16 $\frac{1}{2}$	0.2	3,800
Dripping	16 $\frac{1}{2}$	0.3	3,900
Sugar	69	0.0	7,800
Jam	26	0.1	2,000
Milk	90	3.0	1,800
Total per family per week	—	97.2	94,000
Per head per week	—	24.3	23,500
Per head per day	—	3.5	3,357
Per head per day (grams)	—	97	—

given in the Blue Book for the average amounts of foods of different kinds consumed per week by families consisting of a man, his wife, and four children. The figures in the second and third columns are computed from those in the first column by means of the tables of composition of foods given in the American Bulletin. To arrive at the consumption of protein and energy per head, I have assumed that a woman eats four-fifths as much as a man, and each child rather more than half as much, the whole family on this assumption requiring as much food as four men.

For comparison with Table I., I have computed in Table II. in the same way the protein content and energy value of the average dietary of urban workers, using in this case the figures given in Blue Book Cd. 2337, published in 1904 by the Board of Trade.

TABLE II.—*Protein and Energy Value of the Average Weekly Dietary of an Urban Worker's Family.*

Foods used	Weight in oz	Protein content, oz	Energy value, calories
Meat	104 0	15 0	7,800
Bacon	22 1	1 8	4,100
Cheese	13 3	3 3	1,700
Bread and Flour	512 6	63 0	48,000
Oatmeal and Rice	47 2	5 6	5,100
Potatoes	270 7	6 0	6,300
Butter	31 4	0 3	7,400
Sugar	85 0	0 0	6,000
Milk	193 2	6 6	4,000
Currants	11 2	0 3	1,200
Per family per week	—	101 9	91,600
Per head per week	—	25 5	22,900
Per head per day	—	3 6	3,271
Per head per day (grams)	—	102	—

From the figures worked out above it appears that a working man consumes on the average a diet which provides rather less than the commonly accepted standard amount of protein for a man at light muscular work, but which is appreciably above the standard in energy value. The figures do not pretend to any very great accuracy, but they are probably quite accurate enough to serve as a basis for argument in these pages.

The great importance of wheat-flour and bread in the dietary of the English working classes is perhaps the most

striking point in the two tables. Bread and flour appear to supply 60 per cent. of the protein, and 50 per cent. of the energy, in the diet of the working class population, both of the towns and of the country. Bread and flour indeed form about 40 per cent. of the total food purchased by the English working classes. I have checked these figures by comparison with the results of many of the carefully conducted dietary studies carried out by the U.S. Department of Agriculture, published in various Bulletins of that department. In America bread appears to form only about 30 to 35 per cent. of the total food purchased by the working classes, but this result is no doubt explained by the general use in that country of foods made from maize, or corn as it is called.

Another point that the tables show with great clearness is that the working population of this country consume on the average barely enough protein to keep them in health, and this point is no doubt foremost in the mind of food reformers, their suggested remedy being the use of some form of whole-meal bread. The point is obviously one that requires careful consideration. It would appear at first sight that any change in the average dietaries quoted in Tables I. and II. which tended to increase the proportion of protein in the dietary would certainly be a good change. For the present let this be granted, and let us inquire into the variations in the proportion of protein in bread.

Now the protein content of bread will obviously depend on that of the flour from which it is made. That of the flour will again depend on two factors—the protein content of the wheat from which the flour was milled, and the method of milling. It is the fashion nowadays to lay stress on the milling and to ignore the varying composition of the wheat. The injustice of this line of argument is shown by the following figures. From analyses of wheats from all parts of the world made by the U.S. Department of Agriculture, and published in Bulletin 13 of the Division of Chemistry, it appears that the average percentage of protein in wheat is $12\frac{1}{2}$, but that it may vary from as little as 8 per cent. to as much as 17 per cent. It is quite clear that the varying protein content of wheats is not a factor which can be neglected in discussing the composition of bread.

The extreme variations quoted above are not likely to be met with in practice. I have endeavoured to estimate the extent of variation which ordinarily occurs by computing, from analyses given in *Jago's Technology of Bread and Bread-making*, 1911 edition, page 273, the average content of gluten in English and in foreign wheats. The average percentage of this component in forty home-grown wheats is 7 per cent., in

forty foreign wheats 8 per cent. The gluten determined in the manner described by Jago only represents about two-thirds of the total protein. The average content of protein in home-grown wheat may therefore be taken as $10\frac{1}{2}$ per cent., as compared with 12 per cent. in foreign wheats. These figures are in accord with my own experience, and are further supported by the well known fact that many foreign wheats are harder, or, as the baker would say, stronger than average home-grown wheats. It may be accepted, therefore, that if the same milling process be employed in both cases, bread made from foreign flour may be expected to contain appreciably more protein than that made from the home-grown article, but the difference is in practice not likely to be very great.

Before discussing the effect of different systems of milling on the composition of bread it will be necessary to explain briefly the roller milling process, and to define several terms which it is evident from perusal of current periodicals are commonly used with considerable misapprehension. The first process which wheat undergoes in a modern roller mill is cleaning, a process at which no one will cavil, especially in the case of foreign wheats. The next step is known as conditioning, the essence of which is so to adjust the moisture content of the grain that the kernel is rendered soft enough to crumble well between the rollers, whilst the skin of the grain is toughened in order that it may undergo the least possible amount of tearing, and thus remain in such a state that it may be readily and completely removed from the flour. These are only preliminaries to the milling proper which begins when the wheat is passed between pairs of fluted rollers. The rollers revolve rapidly in the same direction, but at different speeds, and are set at such a distance apart that the grains are nipped as they pass through, and at the same time torn a little because the rollers do not travel at the same speed. The process described above is known technically as a break, and wheat commonly undergoes four such breaks in its journey through the mill. The result of each of these is to produce a small quantity of very finely divided flour, known as break flour, which is at once separated and, without further grinding, is added to the rest of the flour at a later stage. At the same time the rest of the wheat is crushed into a mixture of particles of various sizes which are known technically as semolina. The semolinas from the various breaks are passed through several pairs of smooth rollers in order to undergo the process of reduction. Each reduction pulverises the semolinas more finely and rubs the flour proper from the skin or bran. After each reduction the mixed flour and bran passes through what are known as purifiers, in which the finely divided particles of

flour are sifted away from the coarser particles of husk or bran. The sifting is brought about by shaking or blowing the mixture against finely woven silk, which allows the flour to pass through but holds back the bran. The reductions are alternated between the several breaks, and for each succeeding one the rollers are set closer, and the pulverisation becomes successively finer and finer. As for the mixture from the earlier reductions, the grinding which it has undergone is comparatively slight, and silk of comparatively coarse mesh, about 90 to 100 meshes to the inch, suffices for the separation of the flour from the bran. The flour thus separated is what is known as high grade or patents. It has undergone comparatively little grinding, the flour proper only has been powdered, the bran is still almost intact, and the two can be separated very completely. Such flour is therefore almost free from branny particles, and its colour is the purest white of all the products produced in the mill. It is on account of this whiteness that it is commercially known as high grade, and sold at a high price. The husk at this stage retains much of the kernel still attached to it. This is removed more and more by each successive break, and is powdered by each successive reduction. Each treatment tears some of the husk, and the torn fragments get powdered in the reductions, so that they cannot be sifted away from the husk. The flour from the later reductions therefore contains an increasing proportion of finely divided branny particles, which detract from its whiteness, and consequently from its price. It is a common practice to mix the flour from all the later reductions, except, perhaps, the last, and to sell the mixture under the name of households. The flours from the earlier breaks are commonly added to this mixture. Sometimes the whole of the flour, except that from the last reduction and the last break, is mixed together, in which case it is called straight grade or straight run flour. The flours from the last break and from the last reduction, and the particles of husk sifted out at the various stages of the milling process, form the various products—bran, sharps, pollards—which are known as wheat offals.

The germ is commonly separated almost completely from the flour in a roller mill. Being of a soft and sticky nature it is not powdered in passing between the reduction rollers, but is pressed out into little flat pellets. These are too large to pass through the meshes of the silk used for sifting, and are consequently separated from the flour. They are rather damp and heavy compared with the husk, from which they can consequently be separated by an air current. The germ thus separated is collected and sold to the manufacturers of certain fancy germ breads. The reason assigned by the millers for

the separation of the germ is that its dampness and high content of fat cause it to suffer decomposition, and to impart a rancid flavour to the flour on keeping. In stone milling, too, the germ probably fails to get sufficiently powdered to pass the sifting silks, in which case it would not be included in the flour. The germ forms such a very small proportion of the grain, only about $1\frac{1}{2}$ per cent., that its inclusion or not can really make very little difference to the composition of the bread. Having given the above short outline of the process of milling, we are now in a position to define several terms whose use is necessary for the following argument.

Wholemeal flour is the flour obtained by grinding the whole grain, nothing being separated out in the process. Its composition will be practically the same as that of the wheat from which it is made, the only difference being due to the evaporation of a little water by the heat developed in grinding. Flour of this type is commonly used in the United States under the name of Graham flour, where it was introduced some years ago on the recommendation of a Dr. Graham.

A flour is sometimes made by removing some of the husk and grinding all the rest of the grain. There appears to be no generally accepted name for such flour in England. In America it is called "entire" wheat flour, which is obviously misleading. The nearest English name appears to be "standard" flour, the name so much employed in the bread campaign which has recently occupied a section of the daily press. The name, however, is not the exact equivalent of the American term entire flour, for the latter term in the sense in which it is used in America implies nothing definite as to the proportion of the grain removed in the bran and the proportion retained in the flour, whilst the standard bread advocates demand that standard flour should contain 80 per cent. of the grain.

Straight grade or straight run flour is the flour obtained, as explained above, by mixing together all the flour produced in the mill except that from the last break and the last reductions. It contains very little husk, and what little it does contain is very finely divided. An ordinary wheat mixture such as is commonly milled—and it should be noted in passing that it is the almost invariable practice to mill mixtures of wheat and not single varieties—yields as a rule from 70 to 75 per cent. of such straight grade flour.

Patents is the name given to the flour from the earlier reductions in the mill. It commonly forms about half the total output of flour, or about 36 per cent. of the grain. It is often sold separately because, being practically free from bran, it is whiter than the rest of the flour, possesses superior

qualities from the baker's point of view, and consequently commands a higher price on the market.

Households is the trade name for the flour from the later reductions except the last. It contains some husk in a very fine state of division. Consequently its colour is not quite so white as that of patents, its baking qualities not quite so good, and its price not so high.

Besides the above products, which are all used for bread making, the milling process yields a number of offals, as they are called, which are not used for baking but find their way on to the market for feeding stock. These offals are often described by local names, but some of them are sufficiently well known throughout the country to be mentioned here.

Bran consists of the portions of husk with more or less adherent kernel which have been separated from the flour without having undergone much grinding. Bran is coarse in texture, contains much indigestible fibre, much protein, and is relatively poor in starch.

Sharps have much the same composition as bran. They are in fact those portions of the husk which have been rather finely broken up in the endeavour to separate from them the maximum amount of flour.

Sharps consist of a somewhat indefinite mixture of finely divided husk, particles of germ, and a small proportion of flour, which it is found impossible or unprofitable to separate.

To illustrate the variation in composition of the flours and other milling products mentioned above, I have set out the following table which I have computed on the basis of the analyses given in Report Cd. 5831 of the Local Government Board, by Dr. J. M. Hamill. To keep the table as simple as possible, I have included only those figures which bear on the question under discussion, namely, the percentages of protein and of phosphoric acid.

TABLE III.—*Percentages of Protein and Phosphoric Acid in Flours and Offals.*

Description	Protein	Phosphoric acid
	Per cent.	Per cent.
Patents flour	10·0	·18
Straight grade, about 70 per cent.	10·6	·21
Households flour	10·9	·26
80 per cent. flour	11·0	·35
Wholemeal	11·3	·73
Germ	24·0	2·22
Sharps	14·5	1·66
Bran	13·5	2·50

In this table the analyses illustrate the comparative composition of various types of flour, all made from the same blend of wheat. The figures show clearly that what are known commercially as higher grade flours contain less protein and less phosphoric acid than the flours of the commercially lower grades made from the same blend of wheats, and that the offals contain far more protein and far more phosphoric acid than any of the grades of flours. For obvious reasons the offals themselves cannot be used for bread making. Confining our attention to the various grades of flour, it appears from the figures that the more particles of husk the flour contains, in other words the lower its commercial grade, the higher its proportion of protein and phosphoric acid. It has already been pointed out that the diet of the working classes of this country appears to be deficient in protein, and at first sight it seems reasonable to assume that the numerous attempts which have been made to replace bread made from flours of commercially high grades by bread made from flours of commercially low grades, are well founded and likely to lead to improvement in the diet of the people. ;

Before this assumption can be finally accepted it is necessary to inquire more fully what happens to bread inside the body. A piece of bread when taken into the mouth is first submitted to the process of chewing or mastication. Whilst chewing proceeds saliva is poured into the mouth by the salivary glands. The piece of bread is divided into very small particles by the teeth, and mixed into a paste as it is moistened by the saliva. The digestive ferment of the saliva begins to convert some of the starch of the bread into sugar. As soon as the whole mouthful of bread is moistened it is collected by the tongue into a mass, passed to the back of the mouth and swallowed. In this way it reaches the stomach, where it is submitted to the digestive action of the gastric juice, the ferment of which begins to dissolve some of the protein and phosphates of the bread. Digestion, however, is not completed in the stomach. The bread, which is now finely divided and mixed into the consistency of cream, is passed on into the small intestine, where it meets with the digestive juices of the liver and of the pancreas. These juices, the bile and the pancreatic juice, contain ferments which continue the actions begun by the saliva and the gastric juice, converting more of the starch into sugar, and dissolving more of the protein. As the semi-digested food passes onwards through the intestine, this process continues, and the digested sugar and protein are absorbed into the blood which circulates in the intestinal walls, and carried by the blood to the various tissues of the body. Only that portion of the food which is thus dissolved and absorbed

is of any real service to the body. Finally, those portions of the food which have resisted the solvent action of the several digestive juices, and have therefore failed to be absorbed into the blood, are voided as fæces.

It follows from this that in order to arrive at a just estimate of the actual value to the body of any article of food, it would be necessary to measure exactly how much of the various constituents of a known weight of that food are absorbed from the intestine into the blood. Unfortunately, however, no one has as yet devised a method of making such a measurement. Nevertheless it is possible to make a very close estimate by finding out the weights of the various constituents voided in the fæces when a known weight of food is eaten. The amounts of protein, starch, phosphoric acid, &c., voided, are subtracted from the amounts eaten, and in this way an estimate is obtained of the amount digested and presumably absorbed. This method has been applied to breads made from various grades of flours by several investigators, and the results obtained throw a new light on the question at issue.

The figures given in the following table are obtained by averaging the results of a number of experiments carried out in America on the lines indicated above. The separate experiments are described in various bulletins of the U.S. Department of Agriculture. They are easily accessible in Dr. Hamill's Report to the Local Government Board, Cd. 5831.

TABLE IV.

Bread made from	Per 100 parts protein eaten		Per 100 units energy in food	
	Excreted	Digested	Excreted	Digested
Straight grade flour (70 per cent.)	11	89	8	92
Entire flour (80 per cent.) . . .	19	81	13	87
Wholemeal flour	24	76	18	82

Before discussing the bearing of these figures on the question at issue a word of explanation is necessary. The straight grade flours used in the experiments appear to have been about equivalent to English ground flours of that grade, forming about 70 per cent. of the grain. The term entire flour, as already explained, is applied to flours from which a variable proportion of the husk has been removed. They probably correspond fairly accurately to our 80 per cent. or "standard" flour. The wholemeal flours of course included the whole of the grain. The experiments each covered only

the very short period of two days, but their reliability is increased by the fact that they all agree among themselves, and the figures may therefore be accepted with some considerable degree of certainty. Finally, it should be explained that the energy digested is determined by subtracting (from the heat given out by burning a known weight of the food) the sum of the heat given out by burning the dry matter of the urine and of the faeces excreted as the result of eating that weight of food, the amount of heat in each case being measured by the number of degrees of temperature through which a known weight of water is warmed.

Turning now to the figures themselves, it is at once evident that there is a close connection between the grade of the flour and the digestibility of its protein and energy. These constituents of the flours of commercially higher grades are far more completely digested than the same constituents of the lower grade flours. In other words, the more husk a flour contains the lower the proportion of its protein and energy digested and absorbed into the blood, to be distributed to the various tissues of the body. The differences in digestibility are so large that they cannot be ignored, as is so often the case, in estimating the food value of the different grades of flour.

I have calculated below, from the figures given in Tables III. and IV., the actual amounts of protein and energy which could become available to the tissues of the body from the consumption of the daily ration of bread and flour shown in Table I. Assuming that all the flour included in this ration, both as bread and in other forms, is straight grade flour, then of the 63 grams of protein it contains, 89 per cent., *i.e.*, 56 grams, would be digestible. If, on the other hand, all the flour in the diet were wholemeal flour, the diet would contain rather more protein, as shown in Table III. The exact amount would be $63 \times 11.3 \div 10.6$, *i.e.*, 67 grams. Of this only 76 per cent., *i.e.*, 51 grams, would be digestible. Thus the average workman, if he fed on wholemeal bread, would certainly eat a little more protein every day, but he would really digest considerably less, in fact, 5 grams, or nearly a quarter of an ounce less. Since it is only the protein which is digested and absorbed that benefits the body, the replacement of white bread by wholemeal bread in the diet of the people would rather decrease than increase the available protein of the diet. Exactly the same result appears when the energy values are worked out. Replacement of white bread by wholemeal bread would reduce the available energy of the diet by 170 units per head per day.

The experiments quoted above were all carried out in America, and to the best of my knowledge no experiments on

the digestibility of bread have been done in this country. The Cambridge School of Agriculture, thanks to a grant from the Development Fund, has been able to acquire a fairly complete equipment for the study of digestibility and other important questions connected with the nutrition of animals. Its staff have been asked to undertake the supervision of several of the young men who are holding research scholarships provided by the Development Fund. While the equipment was proceeding of a special laboratory for the study of the digestibility of home-grown fodders when fed to farm animals, it occurred to me that it would be excellent training for the team of research scholars who are proposing to take up this work, to carry out upon themselves a complete trial of the digestibility of two kinds of bread. Accordingly I obtained from Mr. A. E. Humphries, of Coxes Lock Mill, Weybridge, a sack of high grade flour, of the quality known as patents, made from a blend of home-grown and foreign wheats; and Sir Oswald Mosley was also kind enough to supply me with a sack of his own make of stone-ground flour, of the quality known in America as "entire," made entirely from home-grown wheat. This flour was made by grinding the whole berry between stones and subsequently sifting out about 20 per cent. of the husk. After the experiment had been completed it was found that the mill was not working normally. Sir Oswald Mosley very kindly supplied two more samples of stone-ground flour. From one of them about 8 per cent. only of husk had been removed, from the other about 12 per cent.

The experiment was undertaken by a team of four research scholars, working under the joint supervision of Dr. F. G. Hopkins and myself. During the first period of the experiment, which lasted for seven days, the diet of each man was about 2 lb. bread made from the patents flour, supplemented by 2 oz. of filtered butter fat, $2\frac{2}{3}$ oz. of sugar, and 1 pint of milk. The men lived on this diet for a week without any great discomfort, and carried out as the experiment proceeded all the weighings of food and excreta, and a considerable number of the analyses. The remainder of the analyses were completed in the succeeding fortnight. The second period also lasted for seven days, when the diet was as before, except that the bread was that made from the first sample of flour supplied by Sir Oswald Mosley. Again the restricted diet appeared to entail little inconvenience, and the men were able to carry out all the necessary weighings of food and excreta as the experiment proceeded, and to complete all the analyses in about a fortnight. The last two samples of flour presented by Sir Oswald Mosley were tested in a similar manner, except that the period of experiment was in each case reduced to three days.

Before discussing the results I should like to record my thanks to both the donors of the flour, and to express my appreciation of the keenness of the men who carried out the experiment. Such work is extremely arduous. It entails no little self-denial, and in the present case included 600 separate weighings and over 1,000 chemical analyses. I wish also to express my great indebtedness to Sir Oswald Mosley's agent, Mr. A. E. Beck, for the great trouble he has taken in preparing the flours and in supplying information.

A full account will be published later. For the present I propose to give only the figures bearing on the subject of this paper. In calculating the results it is assumed that all the constituents of the milk, butter, and sugar are completely digested, but that since protein is not completely oxidised in the body some of the energy of the protein of the milk will be lost in the form of urea, &c., in the urine. This has been estimated and allowed for in calculating the percentage of the energy of the bread which was utilised.

Comparing these figures with those given in Table IV., it is evident that the differences in digestibility of the various constituents of the two kinds of bread are in the same direction in both the American and the Cambridge experiments. Taking the Cambridge figures and calculating from them, and from the figures for average composition of flours given in Table III., the amounts of protein and energy which could be absorbed from the ration of bread and flour commonly consumed by the working man, it appears that the amount of protein from white bread would be 56 grams, from 80 per cent. bread 57½ grams. For the energy absorbed, the difference is only 9 units. These differences are well inside the error of the various experimental methods employed in determining them, and we may conclude, therefore, from the Cambridge experiment, that the slightly greater digestibility of white bread over 80 per cent. bread practically balances the slightly lower content of protein, and that as far as protein and energy are concerned it is immaterial whether white or brown bread is used. If still less husk is removed, there is a much greater fall in digestibility, and the available protein and energy become smaller.

Turning to the figures for phosphoric acid the case appears to be quite different. The 80 per cent. bread used contained rather more than twice as much phosphoric acid as the white bread. The percentage digested was exactly the same in the two cases, 52 per cent. It follows, therefore, that the 80 per cent. bread supplied to the tissues twice as much phosphoric acid per day as the white bread. Even with the lower digestibility of the phosphorus of the coarser breads, their very high content of this constituent places more of it within reach

TABLE V.—Available Protein, Phosphoric Acid, and Energy in White and Brown Breads.

	Amount in daily ration of											
	Protein in bread made from				Phosphoric acid in bread made from				Energy in bread made from			
	Patents flour	80 per cent flour	88 per cent flour	92 per cent flour	Patents flour	80 per cent flour	88 per cent flour	92 per cent flour	Patents flour	80 per cent flour	88 per cent flour	92 per cent flour
	grams	grams	grams	grams	grams	grams	grams	grams	calories	calories	calories	calories
Bread . . .	52.2	52.4	63.5	63.3	1.38	2.88	4.02	4.15	2,079	2,170	1,866	1,928
Milk . . .	17.7	16.8	18.5	17.9	1.34	1.28	1.29	1.30	505	578	516	530
Butter . . .	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	560	560	559	559
Sugar . . .	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79	79	79	79
Excreted per head per day—												
In faeces . . .	5.8	7.4	12.4	14.7	0.67	1.39	2.39	2.47	86	141	238	267
In urine . . .	—	—	—	—	2.65	2.90	3.24	3.23	42	40	68	86
Per cent available for use in the body . . .	89	86	80	77	52	52	40	40	96	95	90	89

of the tissues of the body. In this respect, therefore, brown bread appears to be preferable, but before definitely stating this as a fact it is necessary to know how much phosphoric acid per day a man requires, and if the ordinary average diet supplies that amount.

Information on these points is not very abundant, nor are the conclusions of the several investigators who have studied the question very concordant. It appears, however, to be fairly certain that an average man requires somewhere between two and three grams of phosphoric acid per day. Analyses giving the average percentage of phosphoric acid in common articles of diet are not numerous, but from the sources available I have estimated as best I could the amount of phosphoric acid contained in the daily dietary of the average working man as given in Table I. Assuming that all the bread in his diet is made from straight grade flour containing the average percentage of phosphoric acid given in Table III., the daily consumption of phosphoric acid works out at 2.4 grams. If all the bread and flour is replaced by 80 per cent. flour containing .35 per cent. of phosphoric acid, the daily consumption of phosphoric acid becomes 3.2 grams. This amount would certainly be enough; indeed, there appears to be no reason to doubt that the smaller amount of 2.4 grams is sufficient. It is sometimes stated that inorganically combined phosphoric acid cannot be utilised by the tissues although it may be absorbed from the intestine. The results of recent investigators are usually quoted in support of this statement, but I have not seen any writer on the subject quote the first definite work on the utilisation of phosphoric acid which has always seemed to be most conclusive. In this Journal for the year 1853, Vol. XIV., page 459, Lawes and Gilbert describe the results of their experiments at Rothamsted on pig feeding. One of the lots of pigs in the experiment was fed entirely on maize. After the first fortnight, during which the young pigs had done very well, the maize-fed pigs began to go wrong. Swellings appeared on the neck, and their breathing became difficult. Maize is well known to be deficient both in protein and in phosphoric acid. It was decided to supplement the diet of maize meal by 3 oz. per head per day of a mixture of finely sifted coal ashes, common salt, and superphosphate of lime. The pigs readily ate this mixture, when their abnormal symptoms at once disappeared. Afterwards they increased normally in weight, and thrived as well as many of the other lots. It seems difficult to believe that any constituent except the superphosphate can have been responsible for this striking result, and if this is so, it is a striking instance of the utilisation by the body of phosphorus in

inorganic combination. It has a special interest in the case of bread, for a reason that will appear later. An experiment on similar lines has recently been carried out at the Experiment Station of the University of Wisconsin by Hart, McCollum, and Fuller, who have shown without doubt that young pigs can make use of inorganic phosphorus compounds.

In the preceding pages I have endeavoured to set out an unbiassed account of the feeding value of different kinds of bread, as affected by variations in the composition of the flour, according to the kind of wheat from which it is made and the kind of milling it has undergone. There is still one point to be considered—what is known as strength. This term is very loosely used by the various classes of people interested in wheat to denote the collection of properties which each considers good from his own point of view. The farmer considers a wheat strong if the miller will give a good price for it. The miller calls a wheat strong if it will make a good yield of saleable flour. The baker's criterion of strength is the capacity for baking a large number of saleable loaves per sack. Obviously it is useless to discuss strength in its relation to food value until the term has been defined with some approach to accuracy. Fortunately this has been done by the Home-grown Wheat Committee, who define strength as "the capacity for baking a large well piled loaf." This definition entirely leaves out two points which are of great importance to the baker—capacity for making a dough which is easy to manipulate in large quantities, and the power of making a large number of loaves per sack. The former is usually called stability, the latter water absorption.

In making flour into bread the usual practice is to put a quantity of flour into a large wooden trough, to add the requisite proportion of salt, to stir in the proper amount of yeast mixed with water, and finally to add water a little at a time, working in each addition until all or nearly all the flour is made into dough of the desired consistency. This operation may be carried out in one stage or more frequently in two stages, but in either case it is found that a sack (280 lb.) of any given flour will absorb a certain definite quantity of water in order to make a dough of definite consistency. This quantity is usually expressed in quarts per sack, and it varies from about 52 to 70 quarts per sack. This means that a sack of flour may make anything from 400 lb. to 450 lb. of dough. The amount of dough ordinarily required to bake a 4 lb. loaf is 4 lb. 6 oz. A sack of flour may therefore produce from 92 to 103 loaves. Clearly the water absorbing power of a flour is of considerable importance to the baker. A flour which absorbs 5 per cent. of its own weight of extra water is in fact

worth to him something like 1s. 6d. more per sack. From the point of view of the food value of the bread produced it appears at first sight that such a flour would produce a bread containing an excessive amount of water, and a correspondingly low percentage of dry matter. This is, however, by no means the case, for the flours which absorb large amounts of water are, as a general rule, flours which contain low percentages of natural moisture. Thus a flour containing only 10 per cent. of natural moisture, and absorbing in the doughing process 103 quarts of water per sack, would produce bread containing almost exactly the same percentage of water as a flour which contained 15 per cent of natural moisture and absorbed only 92 quarts of water per sack. As a general rule some such balance holds between natural moisture and water absorption, but in exceptional cases flour high in natural moisture may absorb much water, and the bread produced from such flours no doubt contains an abnormally low percentage of dry matter. The almost universal practice of blending wheats in the mill must however reduce such cases to a minimum, and their occurrence must be so unusual that they can have little bearing on the general question of the food value of bread. From a large number of analyses of bread, published in the Bulletins of the U.S. Department of Agriculture, it appears that fresh bread contains on the average 36 per cent of water, and that the variation from this figure is not often more than 2 per cent.

The stability of a flour can have but little influence on the food value of the bread produced from it. It is difficult to see how the stickiness or otherwise of the dough can affect the composition of the bread. This property of flour may therefore be left without further discussion, and we may proceed at once to discuss the question of strength proper.

Strength has already been defined as the capacity of making a large well piled loaf. It is clear at once that this definition embodies two ideas. The loaf may be large or small, or it may be well or badly piled, and there is no necessary connection between these two properties. After many years of careful investigation I am satisfied that the size of the loaf produced by any flour depends on the diastatic capacity of the flour, or, in non-technical language, on the presence in the flour of a ferment which is able to change the starch of the flour into sugar when provided with moisture and warmth as it is in the dough. Such production of sugar provides food for the yeast, which continues to grow and make gas inside the dough up to the moment when the moulded loaf is put into the oven. The more rapid the formation of gas inside the dough, the greater the pressure in the loaf when it goes

into the oven, and the greater the expansion as the temperature rises during the process of baking.

The epithet well piled perhaps requires some explanation. A well piled loaf is one in which both the shape and the texture are good. Good shape and texture depend on the quality of the gluten, and this in turn depends on the soluble salts contained in the flour. Gluten is a colloid substance, and like all colloids its properties vary with its surroundings. This is well shown in the familiar case of albumen or white of egg. In its natural condition it is a thick glairy-liquid. On heating it coagulates and changes its properties, becoming a white, soft solid. A somewhat similar change in properties is brought about by the presence of acid, or of certain salts. Another instance of a colloid substance is the clay of the soil. The extent to which the properties of such a soil can be modified by the application of lime or other manurial substances, both for better or worse, is a matter of common knowledge. The soluble salts present in different wheats vary greatly both in kind and in degree. Certain wheats, notably the hard wheats of Canada, are specially rich in soluble phosphates, and contain comparatively small proportions of sulphates and chlorides. Other wheats, and amongst them especially Rivet, and many of the heavy cropping wheats commonly grown in England, contain but little soluble phosphate and much sulphate and chloride. Now sulphates and chlorides have the power of making gluten short and crumbly, whilst phosphates make it tough and elastic. Hence the gluten of Canadian hard wheats is tougher and more elastic than the gluten of home-grown wheats, and toughness and elasticity are the precise qualities necessary to hold the loaf in a good and symmetrical shape as it expands when heated in the oven, and to ensure a good texture by preventing the small vesicles of gas in the dough from breaking into one another and forming large holes.

The bearing of these properties on the feeding value of bread is perhaps indirect. Nevertheless, it cannot be neglected. High diastatic power which produces a large loaf is very generally associated with a high percentage of protein. The power of baking a well piled shapely loaf is associated with a high percentage of soluble phosphate, and other things being equal, with a high percentage of gluten, the chief protein of the wheat grain. A strong flour possessing both these properties is therefore usually above the average in content both of protein and of phosphate, and the undoubted preference shown by the working man for white bread made from strong flour is, so far, well founded, for strong flour gives him on the average more nitrogen and more phosphate, the two constituents in which his dietary is most likely to be lacking. At

the same time it evidently pleases his palate, a point which can never be neglected in considering the value of a food. The ideas as to the real cause of strength which I have stated above have been translated into practice by a firm of milling engineers, who have placed on the market an apparatus for spraying into flour, as it goes through the mill, a solution of malt extract and soluble phosphate. The former increases the diastatic capacity of the flour, the latter effects a distinct improvement in the toughness of the gluten, and thus improves the shape of the loaf. These additions have been much criticised on the ground that it is undesirable to allow any kind of foreign admixture in the preparation of flour from wheat. This criticism seems to be quite unreasonable; first, because since both diastase and soluble phosphate are invariably present in wheat flour, they can hardly be described as foreign additions; and secondly, because, in the light of the Rothamsted and the Wisconsin pig feeding experiments quoted above, and in the absence of definite evidence to the contrary, it cannot be denied that inorganic phosphates may add to the food value of the bread. If it is possible, as the commercial success of the process indicates, to add to the palatableness of the bread produced from home-grown or other weak wheats by addition to the flour in the mill of substances like malt extract and soluble phosphates, which are admittedly harmless and may be of definite value as food, it seems unreasonable to condemn their use, unless for some very cogent reason which has not yet been stated.

There remains only one point of view which has not been discussed. It is sometimes contended that the various types of brown bread retain the germ, which is completely removed from the higher grade white flours by the roller milling process, and that the presence of this germ endows the brown bread with special properties which cannot be expressed in terms of protein content, energy value, or in any other recognised manner. It is certain for instance that, in Dr. Hopkins' experiments with white and brown breads, the young rats fed on brown bread grew altogether more rapidly than those fed on white bread, the difference being quite out of proportion to the difference in protein content or energy value of the two foods. The result is most striking, but Dr. Hopkins would be the last person to argue that the results of an experiment on young rats fed on bread only could be directly applied to the case of the average population of the country of whose diet bread forms only about one half. The other half of the diet, consisting as it does of meat, milk, vegetables, &c., probably supplies in abundance the unknown constituents to the presence of which in the germ its special importance is attributed. Other experiments of Dr. Hopkins have shown for instance that these mysterious, but

none the less important, substances are certainly present in milk and in fresh vegetable matter. Furthermore it is by no means certain that the germ is retained in the flour by any of the methods of preparing it short of grinding the whole of the grain and removing none of the bran. The soft and sticky nature of the germ makes it almost impossible to grind even between stones. It is much more readily flattened than ground, in which case it will be taken out of the flour by even the coarsest sifting. It is doubtful therefore if the rather uncertain presence of a trace of germ in the various types of brown bread is likely to endow them with any special value outside protein content and energy value, at any rate for the average population whose diet is only half bread. For infants or children fed almost exclusively on bread the case may be different. Brown bread for them may have a special value, but it may nevertheless be contended, even in such cases, that no kind of bread forms a suitable exclusive diet for infants or children, and that the proper course is not to use brown bread but to include other feeding stuffs in the diet. For ordinary people the choice of bread may be safely left to individual tastes. Personally I prefer brown bread, but I do so because I like its taste, and because I find that its rather laxative properties suit my mode of life. I do not think that I get from it more protein, more energy, or more good in any other way.

In writing this article I have endeavoured to review the evidence bearing on the composition and food value of bread as affected by variations in the source of supply of the wheat from which it is produced, and in the system of milling to which the wheat is submitted. In conclusion it may be well to set out a summary of the chief points which have resulted from the inquiry.

During the last century the population increased faster than the wheat growing area. This necessitated the importation of foreign wheat. Foreign wheats are for the most part hard in kernel and soft in skin. Consequently they cannot be separated into flour and bran by the old-fashioned stone mill. This fact led to the invention of the roller mill, which produces over 90 per cent. of the flour used in the United Kingdom at the present time.

The general public, and especially the working classes, prefer the white bread produced from the higher grade flours of the roller mill. Compared with old-fashioned stone ground flour or with the various brands of whole meal or standard flours of to-day, this high grade flour if made from the same wheat would be deficient in protein. But it can only be made satisfactorily from a blend of wheats containing a considerable proportion of strong wheats rich in protein, so that the

deficiency in practice is by no means great. It is on the average more than compensated by the greater digestibility of the protein of the higher grade flour, so that the tissues of the body extract as much protein from white bread as from brown.

The energy value of white bread also is at least equal to that of brown bread. The relative demand on the part of the public shows clearly that white bread is generally preferred. In the present state of knowledge there seems no definite reason for concluding that the public taste is wrong.

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THE MILLING OF WHEAT IN THE UNITED KINGDOM.

BY A. E. HUMPHRIES,

A past President of the National Association of British and Irish Millers.

I HAVE recently been shown by a veteran miller some letters written by his grandfather in 1839. They record that in December, 1800, and March, 1801, wheat realised 10*l.* per quarter, and that by an Order in Council millers were prohibited from making "households" flour (the grade used for making ordinary white bread), and "were obliged to use a coarse cloth, so as only to take out the coarse 'bran'"; but "the alteration was not found to answer and the millers were allowed again to make 'households.'" In 1911 wheat has not been scarce or unduly high in price, and no administrative order has been made commanding that bread shall be made only from coarse flour, but we have seen the long continued and apparently unsuccessful missionary efforts of the Bread and Food Reform League taken up by an influential portion of the British press, and we have been exhorted, with semblance of dogmatic infallibility, to seek health, nervous energy, and personal beauty in bread made from flour conforming to a certain formula. The complete miller knows something of dietetics, chemistry, and other sciences, but is not didactic. He listens attentively but impassively so long as "bread reformers" confine themselves to advocacy of their doctrines, and is willing to supply any form of wheaten product for which there is a substantial demand.

No responsible advocate of change in our breadstuffs has been unable to obtain in a proper form at a reasonable price just what he requires. But millers are human. They have

been for generations seeking to reach technical perfection, and to adjust their methods of milling to the changing conditions forced upon them in various ways. In their opinion modern developments of milling are good, and the changes in manufacture are not detrimental to the consumer. So, whereas they would be quite content to say nothing in opposition to the doctrines of "bread reformers," and would supply without comment, as a matter of business, just what is required, they do resent the attacks made upon white flour by people, some of them eminent, who obviously do not understand the technical problems involved. In their view well-meant efforts concerning food reform have failed, because those responsible for them have not consulted the people intimately acquainted with the details as well as with the principles involved. A doctor is likely to know as much about flour milling as a miller knows about physic. If either invade the other's realm, crude and unsuccessful efforts to achieve success will probably ensue; many half truths and some absurdities will be uttered; whereas a combination of forces, each willing to learn from the other and to work wholeheartedly in the public interest, would mean success with a minimum of effort and ill-feeling. Millers are not unduly conservative. When it is proved that further improvements can be made, when the scientist has discovered the nebulous something at present unnamed, for which he is seeking, and has proved not only that its retention or addition to flour is good, but that its presence will not result in some accompanying deleterious effect, the miller will willingly embody the discoveries in daily practice. In the meantime, let a miller attempt to indicate in summary form the course of modern developments.

Some animals, for instance rats and birds, eat wheat in a raw state and thrive upon it. Man cannot. The eating or chewing of raw wheat by human beings will soon cause acute indigestion. Facts to be noted by those who feed the animals named on wheaten products approximating in various degrees to the raw state, and from the results draw conclusions, which they apply to human beings! For the use of man, therefore, wheat has to be ground and cooked.

Some people seem to think that wheat was designed by nature as food for man, an idea which seems to permeate much of the advocacy for whole meal bread. Very little consideration should remove that misconception. Wheat is essentially a seed; the germ, as its name implies, the source of plant life; the endosperm, converted by man into flour, in nature's economy the food of the young plant till it is able to get its sustenance from soil and air; the bran, a protective covering for the food of the baby plant, made by nature to a large extent water-

proof to keep in the endosperm, when by natural processes it is reduced first to a milky and finally to a watery state, and so resistant to disintegration that it remains in existence under ground for several months after the plant has absorbed the endosperm. Man has quite properly in this, as in so many other cases, diverted a natural product from its use in nature's economy to food purposes, but in doing so he has quite rightly used his intelligence and converts into breadstuffs that part of the original product which he himself, after cooking, can properly assimilate, while he gives that part (which he cannot himself directly utilise to best advantage) to those possessors of strong digestions who are made to furnish him with milk and bacon. The separation of wheat after grinding into its commercial constituents, flour and offals, is no new idea. From the time of Moses downwards, flour to be excellent has been "fine," which means that some sifting medium of fine mesh has been used to exclude the bran and finer particles of the skin of the wheat, together known by the generic name of "offals," from the flour. Medical science acknowledges that foods to be in the highest degree good must be appetising, and the answer of the public as to which form of bread it prefers, fine or coarse, is overwhelmingly in favour of the former. For a great many years the virtues of bread containing a large proportion of "wheaten offals" have been extolled, and millers have taken the greatest pains by selecting desirable wheats, and by milling them in many ways, to satisfy the demand for it; yet even now the various forms of wheat meal bread do not represent more than 3 or 4 per cent. of the total bread consumed in the United Kingdom. The Bread and Food Reform League recognised this fact, and varied its teaching to advocate the use of the so-called 80 per cent. standard bread, but in spite of the extraordinary campaign waged in its favour and the extravagant claims made on its behalf, careful inquiries among millers lead me to say that at no time did its consumption represent more than 7 per cent., and at present it does not exceed 3 per cent. of the bread consumed in the United Kingdom.

The milling of wheat, therefore, has always included not only the work of grinding, but of dividing the meal into various commercial products. If the work required consisted of grinding only, no better tool would be required or desired than the millstone, but the public has demanded fine white flour, and this demand, growing more and more insistent, has led by gradual stages to the development of the complicated systems of modern milling. To get white flour, wheat must be thoroughly cleaned, the quality of the grinding must be good, and the method of separating ground products must be gentle,

so that the finished flour shall contain no dirt, and only a minimum amount of powdered bran. This means that in grinding and separating no greater amount of friction shall be employed than is really necessary, and that no product shall receive more grinding than is just sufficient for the purposes in view. It means also that the wheat to be ground shall be in such a physical condition—neither too wet nor too dry—that optimum separations of branny husk from kernel can be made with the tools available. Those are the principles involved. Let me dilate somewhat as to the application of them.

Fifty years ago the kinds of wheat available were almost all mellow. Approximately two-thirds of the quantity ground were home-grown, and the foreign wheats imported were mostly mellow also. This means that the bran was relatively tough, so that methods of milling involving a severe treatment of the grain did not very greatly damage the colour of the flour. But the sources of our wheat supply and the nature of the wheats available have been very greatly changed. Argentina, Canada, India, Russia, and the North-Western States of the United States have become the chief sources of our supply, and the wheats they send us have a friable skin, so that it became necessary to use less friction in grinding and separating.

The necessity for improved wheat cleaning became urgent. Pioneer farming in new countries, and the introduction of agricultural machinery everywhere, meant less care in the cleaning of the land and its produce. Furthermore, the bread-making qualities of the wheats available changed. The bread produced from them is not so pleasant to taste as that from the mellow wheats they replaced, and the presence of powdered husk, which is neither nice nor nourishing, would intensify the defect. So for several reasons some modifications of milling methods became necessary, even if millers attempted to do no more than maintain pre-existent standards of excellence as regards colour of flour, and colour and flavour of bread. The necessity for improvements was more urgent in countries using the newer types of wheat exclusively, and that is the reason why Hungary and the United States were the first to adopt the newer methods of milling. But those methods did much more than enable millers to maintain pre-existing standards of excellence. The extraction of dirt, stones, seeds, and other extraneous matter, the washing and conditioning of the wheat, and the diminution in the amount and intensity of friction used in grinding, improved the colour of the flour very greatly, and the bread produced from it was not only whiter but nicer. Not infrequently it is said that modern bread is not so nice as that obtainable fifty years ago, and modern methods

of milling are blamed for the alleged inferiority, but it is silly to take flour made by older methods of milling from some wheats, and compare it with flour made by modern methods from other wheats, if the object be to test the virtues or defects of the rival methods of milling. Bread produced from millstone made flour can be really nice if the right sorts of wheat be used. Wholemeal bread or the "80 per cent. standard" article can be palatable if the same precaution be observed; but such breadstuffs made from an average of all the wheats available to British millers would not be nice or appetising. "Standard bread" would necessitate "standard wheats." As matters stand, the quantity consumed is so small that the flour can be made from wheats most suitable for the purpose, but if the demand for it greatly increased, its success would probably be its undoing, for then other wheats must be used, and the bread would not be as nice as it is, or, let me say, it would be worse than it is.

The millstone was a fine tool, the quintessence of the experience and knowledge of very many generations of capable millers and specialist millstone builders, but it had its limitations. Consider the thickness of a piece of bran, and realise the degree of mechanical perfection involved in getting a millstone 4 ft. in diameter and 10 to 15 cwt. in weight to revolve for 6,000 hours per annum, in balance, generally on a single point, so closely to a sister millstone, that they touch the bran simultaneously on both its inner and outer sides without unduly pulverizing it and without coming into contact themselves. Something to be proud of! But consider also the amount and intensity of the friction involved—one stone stationary, and the other revolving at a periphery speed of 1,500 ft. per minute. The wheat was "fed" to the stones through a hole in the centre of the upper one, and was passed between them to their circumference by means of indentations in their surfaces, specially placed to force the grain or meal in an outward direction. This involved at least 4 ft. of extremely severe rubbing in one grinding. Compare that with the relatively gentle action of roller mills—two rolls revolving in the same direction at a differential speed; the faster at a periphery speed of about 880, and the slower at 350 ft. per minute, and grinding done at only one point in the circumference. Obviously, if it be desirable to grind with a minimum amount of friction, rolls are incomparably superior to millstones, even though it be necessary to pass the stock through a much greater number of grindings, if rolls be used.

Let me describe some changes involved in the gradual change from one system of milling to the other. I need not enlarge upon the concurrent improvements in our methods of

wheat cleaning, which are approved by everybody, but I should like to say that the great whiteness or brightness of the best modern bread is conclusive evidence that the wheat has been properly cleaned, whereas the consumer of whole-meal or "standard" bread has to accept by faith the direct or implied statement that the wheat from which it has been produced has been properly cleaned. The bread itself does not furnish conclusive evidence that all the dirt has been removed in wheat cleaning.

I have dwelt upon the severe action of the millstone, but it is desirable to consider in detail the results due to it. In mills of even moderate size there used to be one man known as the "stoneman," then the aristocrat of mill operatives, who had as part of his duty to keep the grinding faces of the stones circumferentially "dead true" and radially slightly hollowed towards the centre. As one result of so much careful designing and operating, the bran produced from mellow wheat was "broad," or, in other words, consisted of good sized flakes. We are told that theoretically wheat contains a very much greater percentage of flour than millers have ever extracted in ordinary milling. This was due to the commercial necessity, felt relatively quite as much in millstone days as now, of maintaining a good colour of flour according to current standards. So in practice millstones were not made to remove from the inner side of the bran all the endosperm capable of yielding flour, and it is safe to say that under ordinary conditions more "flour was left on the bran" by millstones than is left there by rolls. But as regards the outer side of the bran, the story is different. The outstanding difference between millstone and roller-made bran is, that the former had a polished appearance which the latter does not possess, and this probably meant that the excess of bran powder made by the millstones, and necessarily included in the flour,¹ came from the outside, and was merely the outermost layers of the bran, to which the phrase I have used that it is "neither nice nor nourishing" can most certainly be applied. There is one point in Dr. Hamill's Report on the dietetic values of various flours and meals which is important, even though it seems to have escaped general attention. On pp. 47 and 48 he gives the analyses of a roller-made flour representing 70 per cent. of the wheat used, and of a 74 per cent. millstone-made

¹ Since writing this article, I have sent flour and bran made from the same wheat by both millstones and rollers to Mr. A. D. Hall, of Rothamsted, with a request that he or Miss Brenchley should examine the samples microscopically with a view to ascertaining whether this statement of mine is correct. Mr. Hall has replied that "the bran powder contained in both the stone-ground and the roller-mill flour appeared to be identical and consisted in the main of fragments of the outer coats of the grain, and not the aleurone layer."

flour, both produced from the same mixture of wheats, the only case of such a comparison in the set, and the figures are these :—

	70 per cent. roller-made	74 per cent. stone-made
Moisture	14 27	14 18
Ash	0 43	0 56
Phosphoric acid (P_2O_5)	0 21	0 25
Proteins ($N \times 5.7$)	11 00	10 54
Ether extract	1 04	0 85

Where in these figures is the superiority of millstone-made flour indicated ?

In spite of what the Bread and Food Reform League say, and of the arguments they found upon a fallacy, the difference in percentage of phosphates present should be estimated from the P_2O_5 figures, not from the difference in ash. The phosphates in wheat contain as nearly as may be 50 per cent. P_2O_5 , so as the difference given above between the P_2O_5 figures is 0.04 per cent., the difference in the phosphates may be taken as 0.08 per cent., one part in 1,250, in favour of the 74 per cent. stone-made flour. To get this fact into focus, consider how many mouthfuls of bread a person eats per day, and how the apparent inferiority in phosphates may be remedied by eating one mouthful more of the nicer "70 per cent. roller-made" article in several days. Note also the inferiority of the stone-made flour as regards proteins, and more significant still its inferiority in "ether extract." I have been saying herein, as a matter of common milling knowledge, that millstones while they polished the outside left ordinarily more flour on the inner side of the bran than rolls do. The cells nearest to the inner side of the bran contain a relatively high percentage of nitrogenous matter, the outermost layers of the bran contain no proteids and are about as nourishing as sawdust. It is, therefore, not at all surprising to find in the analyses just quoted a higher percentage of proteins in the roller-made flour. But I have been careful to say that millstones produced broad bran from suitable wheats, and if flakes of bran, why not flakes of germ? For if millstones did not reduce the bran to a powder sufficiently fine to pass with the flour through the separating medium employed, why should they be expected to reduce a material so oily and resistant to disintegration as germ to such a state.

Competent millers have been saying for many years that though germ was not extracted as a separate product in millstone days, it nevertheless went largely into the offals. I have myself extracted germ from finished millstone offal and showed a sample of it to a Society of Arts audience, but

nobody, so far as I am aware, has ever said that millstone flour contained less ground germ than roller flour. Yet here is a test made specially by a Government official, no doubt with the greatest care, and the roller-made flour contains more ether extract (oil) than the stone-made. Some of us, knowing that germ is the principal source of oil in wheat, had conceived the idea of taking high ether extract figures as an index of the presence of finely reduced particles of germ in flour, and now comes an impartial inquirer saying that in this, the only test he made, the roller-made flour equalling only 70 per cent. of the wheat ground, contained at least 20 per cent. more ether extract than the millstone-made flour of the 74 per cent. extraction. If, therefore, it be true to say, and it is not unsafe to assume it, that the excess of ether extract in these cases is due to the presence of more comminuted particles of germ in the roller-made flour than in that made by millstones from the same wheat, we have indeed a remarkable case, which cuts right across commonly held beliefs on the point at issue. However, I am not going to found upon this one case a statement that millstone-made flour would ordinarily contain less germ than a roller made one, but I do say that these analyses provide valuable collateral support to the following statements:—

- (a) That germ is an oily substance resistant to disintegration ;
- “(b) That millstones produced broad flakes of bran when the skin of the wheat ground was not friable ;
- (c) That by inference millstones were likely to flatten germ rather than reduce it to a powder as fine as flour ;
- (d) That in point of fact, germ could be found, and with difficulty could be separated from finished millstone offal ;
- (e) And that when the intermediate product of millstone milling, then known as middlings, was ground by rolls, germ could easily be extracted.

It is, therefore, utterly wrong to say that the millstone flour of forty years ago contained all the germ and that the modern roller flour none, or that the former contained much more than the latter. It may not have contained any more.

Let us next consider the “semolina.” The manifesto signed by the eight eminent doctors, and published repeatedly by the *Daily Mail*, said that ideal flour should retain “about 80 per cent. of the grain, including the semolina, and especially the embryo or germ, now entirely discarded from fine white flour.” The wording is not lucid, and one is uncertain whether it means that semolina as well as germ is entirely discarded, but

we know, at any rate, that we are enjoined to put the semolina into the 80 per cent. flour. What is semolina? A grocer regards it as a granular product entirely free from flour, which he sells to housewives for making puddings. Nuttall's definition of semolina is "a substance consisting of grains found in certain wheats too hard to crush into flour, and too coarse to pass through the sieve in the bolting." He indicates that the origin of the word is Italian. The term has become current in British milling technology in recent years only. Nuttall's definition applies to the older use of the term, not to our modern one. In certain districts of the world, for various reasons, "Durum" wheat is grown in preference to varieties of the "Ordinary" type. The former is eminently unsuitable for millstone milling. It was impossible to reduce by millstones the endosperm to the fine powder known as flour without simultaneously reducing the bran to a fine powder also. Indeed, it was difficult to reduce the endosperm to flour at all by the older methods of milling. So the miller usually did not try to do so, but from such wheats produced the granular product known as semolina, and left the cook to reduce it to a soft digestible state by the aid of water in cooking. Modern developments of milling enable the miller to make good flour from Durum wheats, but that is no part of my present story, except in so far as it indicates that such modern developments are good.

The millstone, good tool though it was when put to work on suitable material, did not at one operation reduce the wheat to flour and "offal." There was an intermediate granular product consisting of endosperm and husk particles mixed together in varying proportions. This was known as middlings or by some local name. If again ground on millstones, it yielded flour very dark in colour and of a commercially low value, so not infrequently it was sold in its unfinished state for pigs' food or for making cheap biscuits. The quality of a "stoneman's" work was tested to a great extent by the quantity of this product produced in grinding, and to keep that as small as possible it was necessary to grind a relatively small quantity of wheat per pair of stones per hour. But in spite of all such precautions, the percentage of "middlings" was very greatly increased when harder foreign wheats were imported from the new sources of supply; and the miller produced from the first grinding not only flour of lower commercial value, but a much larger proportion of this intermediate product. Then "purification," as it is called, was introduced, a process of separation according to specific gravity, by regulated wind currents, and by means of this process particles of pure husk, similar in size to the particles of pure endosperm, could be extracted by reason of their low specific gravity.

Middlings consisting of endosperm only could be reground satisfactorily on millstones, but taking into account those particles of endosperm to which husk remained attached, it was found that roller mills were a much better instrument for grinding this intermediate product, and that by means of the combination of purifiers and rolls flour of higher commercial value could be produced from the middlings than that produced from the first grinding of the wheat itself by millstones. Therefore, millers set to work to produce an increased percentage of middlings, and for some time it was customary to use millstones for grinding wheat with this object, and rolls to complete the grinding processes. However, it was found that fluted rolls produced more middlings, and in all respects were better tools for the modified purposes than the stones. They were incomparably better for grinding hard wheats, and better, though in lesser degree, for grinding mellow or soft ones.

Among other changes was the production of larger sized particles of endosperm than those found in the intermediate products of millstone days, and the term *semolina* came into general use to indicate the larger sized ones; whilst the term middlings was retained to indicate the small sized ones. Flour, *semolina*, middlings, and dust are in essence the same, all endosperm broken down into particles of different sizes, containing little or much of the branny husk. A pair of fluted rolls, 60 in. long, grinds as a normal feed say 50,000,000 grains (berries) of wheat per hour. It is obvious, therefore, that from a microscopist's point of view, the grinding of wheat on a commercial scale makes a jumble, and it is incorrect to regard *semolina* as the product of any one part of the wheat berry. Furthermore, as the term "middlings" is used also to denote certain grades of "millers' offal," it is not uncommon or undesirable to confine its use to the last named material and to describe the granulated product of ground wheat, derived principally from the endosperm, by the generic name of *semolina*, and I will use it in this sense for the remainder of this article.

I have already said that flour of higher commercial value can be obtained from *semolina* than from the first grinding of wheat itself, so it has become the miller's object to make as much *semolina* and as little flour as possible in the earlier grindings of wheat. As a result of that part of the process he obtains from 10 to 20 per cent. of the wheat as finished flour, and about 20 per cent. as finished bran. That accounts for at most 40 per cent. of the wheat. The remaining 60 per cent. is *semolina*, using the term in the generic sense. It consists of particles of pure endosperm, particles of endosperm and husk in physical combination, a proportion of the very small

percentage of germ, and some particles of mere husk. Its particles are of different sizes and of different specific gravities. To sort according to specific gravity the miller divides the semolina into many groups according to size, and then "purifies" each group with wind currents. An average sample of wheat contains berries of varying characteristics. Those which from one cause or another have been damaged, for instance by unfavourable weather, yield particles of relatively low specific gravity. The particles of high specific gravity are generally the hardest and require more grinding than the remainder. Obviously, the largest particles require more grinding than the smaller ones. So the object of the miller in handling this intermediate 60 per cent. of the wheat is to segregate the particles according to size, and, having grouped them with this object, to sort each group according to specific gravity, thereby enabling him to apply one root principle of modern milling, that no part or particle of the wheat berry shall receive more grinding than is just sufficient for the purposes of separating kernel from husk, and of reducing the former into the powder known as flour. To reduce the semolina to its commercial constituents—flour and offal—the particles are ground successively on "reduction" rolls. Some particles get one grinding only, some several grindings.

The best semolina contains the particles of highest specific gravity and the least husk. From it the highest grade flours are made, and the very best generally at the second grinding. In modern British mills no intermediate products are sold; the flours are of various grades, according to quality; the offals of various grades, according to the size of particle. Putting the point another way, British millers in millstone days sold semolina as we now call it; modern British millers do not sell it as such, but resolve it into its commercial constituents—flour and offal; yet those who drafted and signed the bread reform manifesto told the public either that millers were in the habit of excluding semolina from flour, or at least that they ought to include it. Later in the controversy the form of recommendation or instruction was changed, and then the "reformers"—who, I suppose, ascertained at a lamentably late stage that it is impossible to make from semolina a loaf of bread involving the retention of gas for the purpose of aerating it—said that millers must include the semolina flour in the 80 per cent. Of course they must to get a product equal to 80 per cent. of the wheat ground; indeed it is necessary to do so if a flour equalling 70 per cent. (or even much less) of the wheat is to be obtained.

One result of the divisions and sub-divisions of products during milling is the production of various grades of flour

from the same wheat. From the semolina of high specific gravity and almost free from husk, come the high grade flours of commerce; from the later grindings of those particles when the proportion of husk is greatly increased by the previous abstractions of flour, also from those primary particles which contain much husk, and from the original grindings of the wheat, come the lower grade flours. The highest grade bread flours of commerce are not made from very starchy wheats. They must contain a large proportion of nitrogenous matter, or they would not yield large well-aerated loaves. The whiteness or brightness of such bread is due largely to the fact that the flour used has been produced from the semolina freest from husk.

Furthermore, it is wrong to say that these highest grade flours have been very finely "dressed," for there is no necessity to use a sifting medium of very fine mesh, having regard to the fact that the semolinas from which they are produced are themselves so free from husk. It is nevertheless true that the highest grade flours do contain, as a rule, slightly less nitrogenous matter than the lower grade flours produced from the same wheat. They also contain less phosphates than the corresponding lower grade flours, but the phosphates which are in the former appear to be of superior quality. I will not elaborate that detail, for space is almost exhausted, nor will I enter into the question as to whether nitrogenous matter and phosphates contained in wheaten husk are of high or important food value, but assuming for present purposes that everything said by food reformers is true, and that we may take the higher nitrogen and phosphate (P_2O_5) figures of lower grade flours at their face value, I still maintain that modern developments of flour milling are good.

Assuming that the whole 70 per cent. of the cleaned wheat ordinarily produced as white flour went into one grade, the price of it on any one day would be a certain figure, say for the sake of illustration 30s. per sack. But if the flour be divided up into two grades and half of it realises say 32s., the price of the remaining half of lower quality would be 28s., and the miller would obtain the same return. If this lowering of the price of the "households" quality meant that poorer people obtained dietetically the worse article, food reformers or the poorer people themselves would have some cause for complaint, but the very opposite is the case, as we have seen or assumed. But people who can afford a higher price for bread and flour live on a mixed or highly mixed diet, and in all probability obtain from meat, fish, eggs, and other sources all the nitrogenous and phosphatic materials they require. The instinctive preference for the whitest bread may be

nature's own device for providing the desirable counter-balance of starchy food. However that may be, the fact remains that the bread of relatively high nitrogenous and phosphate contents goes ordinarily to the poorest people. But our bread reformers would change that division of flours. They insist on an 80 per cent. flour, which stated in another way means this. In the suppositional case I have been using as an illustration the miller produces 35 per cent. of high grade flour and 35 per cent. of lower grade flour (households) from the same wheat. To obtain an 80 per cent. flour from the wheat, an extra 10 per cent. of very low grade flour, or of fine offal, has to carry dietetically and commercially 35 per cent. of a flour high in price, containing a relatively low percentage of nitrogenous and phosphatic material. How the poorest of the poor or anybody can benefit by that I do not understand, nor need I labour the points. The stuff most nearly resembling the 10 per cent. article in America is called significantly "Red Dog," and in Germany is mixed with rye flour to make it passable as human food.

I do not say that in milling matters we have reached perfection. I do, however, say that most of the arguments for an 80 per cent. flour are based on fallacies and the cause of genuine bread reform has suffered from the lack of co-operation between those who really understand the problems and those whose zeal for a good object is their principal merit.

British millers are not inclined to be apologetic. Their craft has been revolutionised; the windmill, and to a large extent the small water mill, have gone, never to return. For sentimental reasons, one grieves that the picturesque side of milling has suffered so badly, but there is another side to the picture. Go through a really modern mill, note its high rooms, good lighting, clean machinery handling properly cleaned wheat; go into its wheat stores and wheat cleaning department, see the dirt and extraneous matter extracted, partly by the washing of wheat; consider then what the picturesque but dirty rat-infested typical old-fashioned country mill possessed by way of equipment, and nobody would sincerely desire a reversion to past conditions. So far from apologising for modern flours and processes, British millers are proud of the developments which have placed them in the van of technical progress. If at any time scientific work shows that a substantial benefit to the consumer can be achieved by some further modification of the milling process, the scientists concerned should seek the co-operation of representative millers and refrain from launching any recommendations or manifestos until all aspects of the questions involved have been thoroughly discussed.

A few years ago, millers believed that no fundamental or chemical change was produced in the flour by the milling of wheat. To-day a few realise that this belief is no longer true, and that there is ample scope for the chemist in this phase of the world's progress.

Weybridge,
November, 1911

A. E. HUMPHRIES.

STATE AID TO AGRICULTURE IN IRELAND.

STATE aid is now administered to agriculture in Ireland mainly through the Department of Agriculture and Technical Instruction, and the policy and work of that body, at least as regards agriculture, will naturally form the greater part of this article. But as the Department only began work in 1900, and State aid to agriculture had been known in Ireland long before then, there must be some survey, however cursory, of what had been done previously. It will be necessary to glance at voluntary effort also, since State aid in former times was often administered through voluntary agencies. This retrospect is the more necessary since the idea of the Department itself was an Irish not a Westminster inspiration, and if we took no thought of the former times the reader might mistakenly suppose that the ambition for agricultural improvement in Ireland was State fostered, not home born.

No voluntary association has administered more State aid to agriculture in Ireland than the Royal Dublin Society, a body established in 1731 "to promote improvements of all sorts." Arthur Young said that to it belongs "the undisputed merit of being the father of all the similar societies now existing in Europe." It has for a century and a half administered State funds in varying yearly sums, ranging from 2,000*l.* to 15,500*l.* It was during the latter half of the eighteenth century that the Royal Dublin Society began to administer public money. It gave premiums to encourage land reclamation, tillage, planting, fencing, irrigation, and the improvement of bee-keeping, live stock, horses, and so on. Until recently it administered a special grant of 5,000*l.* per annum for improvements in horse-breeding. The Society, amongst its many activities, established a College of Science which was eventually taken over by the Government, and became the Royal College of Science, where, in time, was instituted a Faculty of Agriculture, of which we shall see more. With the Royal Dublin Society was finally amalgamated the Royal Agricultural Society of Ireland, founded in 1841. The Royal Agricultural Society did much in its earlier years to promote better farming in Ireland, notably by a system of travelling instruction in practical agriculture.

Want of funds brought this scheme to an end, but not until some real advantages had accrued from it, such as the introduction of green-cropping into the south and west, and even the centre of Ireland. Another body, the North-West of Ireland Agricultural Society, established in 1826 a school of agriculture at Templemoyle, near Londonderry, the first of the kind in Ireland. This school, the aim of which was to turn out skilled, practical farmers, became connected with a State institution, the Board of National Education, in 1850, and continued to work until 1866.

A more ambitious effort to supply agricultural education to Ireland was made by the latter Board. In 1838 it made agriculture a subject in the course at its training college for elementary teachers, and established a model farm at Glasnevin, Co. Dublin, where these teachers-in-training might see in practice the principles taught in the lectures on husbandry. The express purpose of the Glasnevin institution was, not to produce land stewards or practical farmers, but mainly to qualify elementary teachers to instruct the pupils of rural schools in the principles of agricultural science. Later on, however, the Board attempted a system of technical instruction in agriculture, and rented some twenty farms in various parts of the country, fitted with residences and farm buildings, and spending over 100,000*l.* on the scheme. They also offered gratuities to teachers in rural workhouse schools for the successful management of any farms attached to the institutions, and for giving sound agricultural instruction to their pupils. Soon, however, economic objections were raised, and the English Free Traders showed strong and persistent hostility to the training of farmers and stewards at the public cost. The Board felt obliged to abandon the workhouse scheme, and to abate its energies in the establishing of model farms of its own; in short, its activities in this sphere became paralysed by the criticism and opposition directed against it in Parliament, and by the ceaseless hostility of the Treasury.

Moreover, the enthusiasm at first evoked by the starting of the scheme had altogether abated. By 1873 there was but a handful of pupils resident at the twenty model farms in the provinces. The Board then proceeded to get rid of nineteen of these farms, and were about to drop the twentieth—the Munster Institute at Cork—when a local committee, concerned at the decline of the Cork butter trade, proposed that it should be turned into a school of practical agriculture and a training institute for dairy-maids. This scheme was carried out, and the only agricultural establishments now remaining under the Board of National Education were this Munster Institute and the Glasnevin Model Farm. Both of these now accepted

ordinary agricultural students, not in training for primary school work. It may be added that various industrial and reformatory schools included agricultural and dairy instruction in their courses, and with success. Such was the condition of state-aided agricultural education in the eighties and nineties.

But the rural population at large was never less concerned about its own education in agriculture, and never was the State less concerned on its behalf in that matter. It was the time of agrarian convulsion, followed by drastic agrarian legislation. The immediate cause of that convulsion was the distress due to a few bad harvests, but its continuance was the result of the unceasing fall of prices owing to foreign competition. Ireland had long enjoyed a clear market for her produce in Britain, but of late formidable rivals had begun to appear. Denmark and Normandy were sending in butter superior to that of Cork, and the former was sending over bacon better than that of Limerick, while the increasing inflow of American produce made the Irish farmer's position still more critical. The only remedy against this condition of things known to the uninstructed Irish landholder was more, and ever more, agitation for reductions of rent. The agitations gained the reductions, but they did not abate the force of foreign competition. The butter trade had fallen greatly, and the once noted Cork butter had come to hold only an inferior place in the British market. The revival of the Munster Institute as a dairy school, though not without fruit, did not produce anything like a general effect even in Cork county, much less in Ireland at large. At Dublin the late Canon Bagot tried a propaganda of his own in favour of improved dairying, but he was as the voice of one crying in the wilderness; he was on the track of true ideas, but the country was not sufficiently instructed in modern agricultural principles to see the true significance of his teachings.

Events, however, were soon to unseal the Irish dairy farmer's eyes to the truth of his position. The creamery system wrought a revolution in the butter-making industry. The Irish farmers did not adopt the new methods, but strangers came amongst them who did. The English and Scottish Co-operative Wholesale Societies began starting creameries of their own in Ireland, and the local farmer either sank into the position of a mere milk-seller to the creamery, or else into that of being outclassed as a butter-maker by the newcomers. When I returned from America in 1889, this was one of the problems I found most pressing, and to which, with other workers, I set about applying a remedy. But the general state of agriculture was depressed, and we had to consider the situation as a whole. We considered that the Irish farmer, who is, as a rule, a small holder, with hardly any capital, could

never, single-handed, make any great advance in agriculture, and very little in farming as a business; he lacked the training, the methods, and the organisation of his foreign rivals. A large immediate improvement in his methods of farming would in itself have been of little use without an even greater advance in his means of marketing his produce. He had three problems to face: how, being poorly-off, to get his requirements advantageously; how to increase his produce; and how to market it most profitably. The last problem was quite as pressing as the former two, indeed there was little use in solving these unless the marketing difficulty was met simultaneously.

In these circumstances it seemed to us that the application of co-operation to the business of farming was the thing most likely to save the Irish small holder. Starting in the year 1889 we set our propaganda on foot, and though the work was terribly uphill at first, we at length began to make some advance. After five years we found it necessary to start the Irish Agricultural Organisation Society, so as to continue on a broader basis the work which was becoming too much for a few individuals. In the following year, 1895, some of us who had been working together in this movement invited a number of representative Irishmen of all parties to meet in order to see for what measures beneficial to Ireland a common agreement could be secured. Many Irish public men of note responded to our invitation and we formed a committee which sat during the Parliamentary Recess of 1896, and was hence called the Recess Committee. The Committee set themselves to study the methods adopted by the State in other countries for the development of agricultural and industrial resources, and sent commissioners abroad for that purpose. The result was the presentation of a Report recommending the creation of a Department of Agriculture and Industries for Ireland, which should be responsible to Parliament through a ministerial head, and in contact with public opinion through an elected consultative Council. Mr. Gerald Balfour was then Chief Secretary for Ireland, and in January, 1897, he very favourably received an influential deputation which waited on him for the purpose of advocating the new scheme. Two years afterwards a Bill embodying most of the Recess Committee's chief recommendations was passed by Parliament, creating a "Department of Agriculture and other Industries and Technical Instruction for Ireland."

It now becomes important to describe not only the constitution of the new Department, but the ideas underlying it, and the policy which it was meant to carry out. Take first its constitution. Why was technical instruction linked with an agricultural Department? For the reason that in

Ireland the general trend of industry is rural rather than urban, since the agricultural interest itself naturally dominates the others. Most of the provincial towns are as much rural as urban in their economic circumstances; hence the problem of technical instruction in such a country must naturally be how to provide a population mainly rural with a training that will not only help them to develop agriculture, but give them aptitudes for industries not yet existent among them, which their trained intelligence must be the chief agent in creating. Thus it comes that from the science and art institutions in Dublin down to the secondary schools in small provincial towns, the agricultural and industrial features of technical instruction are continuously interwoven, and must be considered with a common thought for both. It was the conviction of those who projected the Department that the main activities of the country must ever be agriculture and its subsidiary industries. Above all it was their desire that education, technical and secondary, should as far as possible be deliberately related to the real economic and social needs of the country.

Upon the basis of these ideas the new Department was founded. The Department consists of the President (who is the Chief Secretary for the time being) and the Vice-President, who is its working head and a Minister in Parliament. The staff consists of a Secretary, two Assistant Secretaries (one for Agriculture and one for Technical Instruction), as well as certain heads of Branches, together with a number of "Inspectors, Instructors, Officers, and Servants." There is a Council of Agriculture, and two Boards, one for Agriculture and the other for Technical Instruction. The Council consists of 104 members; 68 of these are elected by the County Council and 34 are nominated by the Department. The President and Vice-President are *ex-officio* members of the Council and of both Boards. The Council itself creates the larger part of the Agricultural Board, and shares with the County Boroughs the appointment of the majority of the Board of Technical Instruction; to these Boards is entrusted the control of the funds with which the Department is endowed. It will thus be seen that the Council has a good deal of direct power, while its influence as an advisory body is so great that the Vice-President could hardly ignore its opinion, representing as it so largely does the agricultural and industrial interests of Ireland. These representative bodies (the Council and the two Boards) are a new feature in the administrative system of the United Kingdom, and were adapted from Continental models. The Council of Agriculture differs from its foreign prototypes in the greater amount of direct power entrusted to it. The

Council, it may be added, must meet at least once a year for the discussion of matters of public interest in connection with any of the purposes of the Act. For the first few years it met whenever occasion arose : now it meets twice a year.

The foregoing narrative is intended to enable the reader to understand the constitution of the Department and the ideas underlying it.

When the Department was started in April, 1900, I was appointed its first Vice-President. Once in unfolding its policy I said that the aim of the Department was to be that of "helping people to help themselves." The new body was not to be a mere machine for administering State subsidies. The idea of those who founded the Department was that State aid should be based upon self-help, or directed to evoking and fostering the spirit of self-help wherever it did not as yet exist. It was in pursuit of this aim that in its constitution the elected public bodies of Ireland are so closely associated with the Department, the idea being that the new institution should work with and through local bodies. The Act expressly prohibits the Department from applying (save in special cases) any of its funds to schemes in respect of which financial aid is not provided by local authorities or from local sources. The local bodies must give if they mean to receive, and must also set up the committees which are to administer the main part of the Department's work in their own districts. They provide, then, the local administration and part of the funds ; the Department provides the rest of the funds, as well as expert skill and advice. It is plain then that if the Act is to work at all, its working must depend mainly upon the willing co-operation of local bodies.

There are strong reasons why such a constitution and mode of working are not merely desirable but essential in Ireland. Through the effect of unhappy past causes, Irishmen are peculiarly prone to throw all their burdens upon the State, largely because they look upon the State as having been the author of the causes in question. But while they are so much inclined to look to the State for remedial effort, they are also inclined to regard all direct State action in Ireland with either apathy, aloofness, or hostility, their interest manifesting itself chiefly in captious criticism. If the new Department had attempted to work on ordinary bureaucratic lines, its whole proceedings, however well-intended, would have been regarded with coolness or aversion. But when machinery was devised which placed some of the central and almost all the local administration in popular hands, the whole case was changed, and a turn for cavilling could only find play at the expense of the friends or neighbours of the cavillers. Moreover, the local

Committees were given a main share in devising the schemes which they were themselves to administer; hence they must go into all the questions at issue, think out the details, the ways and means, and so evolve such a plan as they could hope to work with practical success. This also was necessary. The Irish farmers, having been long left without much share in local public affairs (they had County Councils only a year before the Department came), were fonder of dealing with problems in terms of loose, generalising rhetoric, than of coming to close quarters with them, and thinking out their thoughts about them in the light of actual effort and administrative difficulty. But now being given the power to devise and administer schemes of their own, they are forced to approach all questions with a sense of their practical difficulty, and not from the standpoint of men who were unsympathetically criticising from outside measures not devised by themselves. The committeemen became each and all interested in the success of the schemes they had framed. Instead of being querulous critics of the Department they were enlisted as its friends. The Department thus acquired the benefit of local knowledge and opinion, while the local bodies themselves gradually gained, through administrative experience, a sympathetic understanding of the necessarily tedious process by which sound reforms of the kind contemplated are achieved. In this way the local leaders of opinion learnt patience, and gained in sense, ballast, and forbearance. As ratepayers, contributing almost half the cost of the schemes locally administered, the farmers of every district had a direct incentive not to let their money go to loss by refusing to avail themselves of the advantages offered; in this way they are disciplined in self-help. All this it is necessary to emphasise; those of us who were concerned in establishing the Department recognised that its success would depend not only upon expert skill and scientific principles but on the attitude towards it of those whom it was meant to benefit. The root idea of the Department may be summed up as local initiative and central direction; the former to evoke and fortify the spirit of self-reliance, enterprise, and responsibility in the people, and the latter to prevent an indiscriminate multiplication of unrelated local schemes.

The conditions of agricultural education in the United Kingdom at this time (1900) were extremely backward. Whilst Great Britain had suffered from the neglect of rural life consequent on the fact that primary and secondary education were, and to a considerable extent still are, modelled upon urban ideas and requirements, Ireland suffered much more because of being a country where agriculture is the

ruling interest. There was, however, one offset to this in the stirring of the desire for better farming brought about by the work of the agricultural co-operative societies, over 400 of which were in existence when the Department commenced its work. As it was on the basis of the work of those societies that the new Department was erected, so also it was through their co-operation that the early phases of its work—by no means easy work—were rendered in any degree fruitful; in some cases indeed, one might say, rendered effectively possible. The farmers who made up the membership of these societies, denied real business education, and even instruction in their own calling in their youth, learned through the experience gained in carrying on their associated industry the value both of business combination and of the technical education which is so essential an element in making such combination financially successful. The Department by utilising these organisations, embracing a membership of about 40,000, was thus enabled from the outset to cast the living seed of education into fruitful human soil. The men whom the I.A.O.S. had taught to co-operate for the marketing of butter or the purchase of manures, were swift to see the value of improved instruction in dairying, and to seize the opportunity of studying, through the Department's experimental plots (a branch of work which the I.A.O.S. had initiated before the Department began its useful career) the increased gain which comes from using the right fertilisers and raising crops from the best seeds.

The endowment, on which the Department started to work under the Agricultural and Technical Instruction Act of 1899, was an annual income of 166,000*l.* To this has been added 5,000*l.* under the Agriculture and Technical Instruction Act No. 2, of 1902; 19,000*l.* under the Irish Land Act of 1909; and 7,000*l.* from the (Ireland) Development Grant. Of the total sum of 197,000*l.* close on one-third (62,000*l.* per annum) has to be set aside for technical instruction (by which instruction in industrial as distinct from agricultural pursuits is meant), and 10,000*l.* is devoted annually to sea fisheries. Equipped financially, the Department set to work; the agricultural branch starting operation in the autumn of 1900. For the detailed record of the Department's activities which follows I am largely indebted to Mr. J. R. Campbell, the Department's Assistant Secretary in respect of agriculture, to whose valuable memorandum on the Department's work, submitted to the Royal Commission on Congestion (1907), I shall have occasion to refer again.

The first duty of the staff was to attend meetings of County Councils and explain the provisions of the Act, and the steps

to be taken to put it into operation ; to obtain and consider suggestions as to what the Department should do for agricultural development, and to become acquainted with those whom the Act was intended to benefit. Advantage was taken of these visits to study the peculiarities of Irish agriculture in respect of the size of the holdings, the farm buildings, the tillage of the land, the crops grown, the class of stock raised, and the condition of dairying, horticulture, and poultry-keeping. Regard was had also to the social position of the farmer himself, his business methods, capital, general and technical education, and to some extent his aspirations.

The conclusions arrived at after this preliminary study were :—

(1) That the most important work which the Department had to perform was that of laying the foundation of a permanent system of agricultural education. The immediate introduction of a system of agricultural education such as exists in other countries was seen to be impracticable, as in the first instance the conditions of agriculture in Ireland and the circumstances of the farmers differed from those of most other countries, particularly with respect to the size of the farms : moreover no provision had been made in Ireland for the training of suitable teachers.

(2) That in the application of the Department's endowment to aid in the development of agriculture it was desirable as far as practicable to work through the local authorities.

(3) That a large number of the projects on which the country desired the Department to embark would at first have to be undertaken by the Department's officers themselves, and afterwards gradually be transferred to the local authorities.

A few words may be said here respecting the division of work. The county is the unit of administration for joint work, such as live stock improvement and schemes of itinerant instruction in agriculture, while things of immediate national concern, such as the investigation of outbreaks of diseases in stock, are administered directly from the Department, together with all such matters as cannot well be administered locally.

The local authorities are the County Councils, of which there are thirty-three, each council, however, appointing a committee of agriculture, composed partly of members of the council and partly of other persons. To this committee the council usually delegates full powers, subject to the approval of the Department, for the administration of the funds placed at its disposal. The County Council alone can raise a rate for the purposes of the Act, the maximum rate being a penny in the pound. The amount raised by the county rate is usually transferred by the County Council to the County Committee to

be applied by them, subject to the approval of the Department, partly to schemes of agriculture and partly to schemes of technical instruction.

In the early years the Department recouped County Committees one-half the cost of each piece of work, except in the case of a number of the poorer counties, whose proportion was slightly increased. At present the Department's contribution is three-fifths of the actual cost of each scheme undertaken in the poorer counties, and five-ninths in all other counties. But these payments do not represent the whole of the Department's contribution towards the cost of the work done in connection with county schemes. For example, in connection with the live stock schemes, the Department pays the whole of the fees and expenses of the judges and veterinary surgeons who act at the local mare shows, the fees and expenses of the judges in connection with the award of prizes for good farming and well-kept cottages, the whole salary of itinerant instructors in agriculture, the cost of pioneer lectures, and of special investigations and inquiries. One instance will illustrate how the Department's grant is divided amongst the County Committees. The vote for live stock improvement is made annually in August, and amounts to the sum which the Department estimate may be usefully spent on this form of agricultural improvement. The sum voted is a round figure, and is usually about 15,000*l.* per annum. The division is made by the Department on the basis of the valuation of the county, as well as on the basis of the number of live stock in the county. Each County Committee, therefore, has at its disposal what is known as a "joint fund," *i.e.* a sum made up of its rate levied for the purpose of the Act, and the Department's grant. The financial minutes sent to the Department after each meeting of the County Committee show all payments made out of the "joint fund." The amount of the Department's contribution is then calculated and forwarded to the Committees. Any unexpended balance of the rate remains with the Committee; an unexpended balance of the Department's fund is retained and invested for the purpose of erecting and equipping agricultural institutions. In cases where the funds of a Committee fall short, the Department usually make an advance before its financial minutes are submitted, in order to enable urgent claims to be paid. Supervision of the details of this expenditure cannot be undertaken by the Agricultural Board. It therefore rests with the Department to discharge this duty. If they use their control unreasonably, they are liable to be taken to task by the Board, who are themselves members of County Committees, and to whom the local representatives would complain if they were

being improperly treated as regards funds, or else by the Council of Agriculture.

In connection with the county schemes, and indeed with all the work of the Department, the educational bases on which the whole structure of State aid to agriculture is being reared requires some explanation. Of all the agricultural problems which the Department have had to solve, that of gradually leading Irish farmers to appreciate a good agricultural education for their sons has been the most difficult, and has received the most attention. To induce the farmer to make some sacrifice to give the son, who is to succeed him in the holding, a technical education suitable to his calling, it is necessary first of all to convince him of its advantages. As it is impracticable to bring the farmer himself to school, the only way of teaching him the application of science to agriculture is by sending round instructors to give lectures in the evenings, and to visit holdings during the day and discuss privately with the occupiers the various problems which confront them in their daily work. Such an officer, if he is armed with a thorough knowledge of his business, both scientific and practical, rarely fails to convince a farmer of the fact that he would have been more successful had he received an agricultural education, and that it is to his son's advantage that he should be given one. The whole educational scheme of the Department starts on those foundations, and its details may be summarised under seven divisions as follows :—

(1) To provide at one central institution the highest form of technical education for the training of men who are to become teachers and specialists in agriculture. This has been done by founding a Faculty of Agriculture at the Royal College of Science, Dublin, in connection with the farm and college at Glasnevin. The College provides courses in the natural and applied sciences, and was attended during the session 1909-10 by 126 students. The College is strong, as is to be expected, on its agricultural side, and provides, for the students who need them, lectures on agriculture, agricultural biology, agricultural chemistry, and of course geology, mineralogy, botany, zoology, &c. Courses on rural economy and school gardening are also given; a portion of these are carried on at the College and the remainder at the Albert Agricultural College, Glasnevin, and at the Kingstown Technical School Gardens.

(2) To provide at least one high-class agricultural college which would form a stepping-stone for men desirous of entering the Royal College of Science, as well as men, the sons of well-to-do farmers, who wish for an education to enable them to manage their own farms; and men who desire to become creamery managers, or who wish to have a special training to fit them as horticultural or poultry experts, stewards, land

agents, or for other occupations in connection with agriculture. This has been done at the Albert Agricultural College, Glasnevin.

(3) To provide provincial institutions at which young men who can be spared from the farm for one year can be taken in as apprentices and taught agriculture, both practical and technical, at a fee proportionate to their means. This work is in progress at three such institutions, viz., Ballyhaise, Co. Cavan; Clonakilty, Co. Cork; and Athenry, Co. Galway. The provision of others is in progress.

(4) To provide winter schools of agriculture where the sons of farmers could obtain technical training at small expense during the winter months, when they can best be spared from farm work. Seventy such schools, in twenty-six counties, attended by 1166 students, are accounted for in the Department's last report.

(5) To provide one central higher institution for the training of women in the domestic economy of the farmhouse, and in work which falls to the lot of women to perform in connection with the farm, as, for example, dairying and poultry-keeping. This provision has been made at the Munster Institute, Cork.

(6) To provide education for young women in domestic economy and farmyard lore at residential and day schools. This has been done at a number of institutions, while the equipment of others is under consideration.

(7) To provide in each county, by a system of itinerant instruction in agriculture, horticulture, dairying, poultry-keeping, and bee-keeping, instruction and advice for farmers and their wives, sons, and daughters who cannot avail themselves of other means of acquiring information.

The educational work described so far has been, in the main, directed to the training of teachers and experts. The education which is provided by local authorities, on the other hand, is intended to help the occupiers of the land as well as cottagers, and to arouse in them a desire for a better education for their sons and daughters. The operations of the local authorities are the "county schemes" already referred to. These provide for instruction by itinerant instructors—a form of education which has played an important part in the development of agriculture in many countries. The work is now under the immediate direction of the County Committees of Agriculture. Each year has seen a greater demand for instruction of this character. The cost of these schemes is paid out of "the joint fund," that is, the amount of the penny or halfpenny rate provided by the County Council, and the Department's contribution, which is provided annually by the

Agricultural Board after the schemes for the year have been placed before them and approved.

The popularity of these schemes has been so great and the demand for such work is increasing so steadily that there is every prospect of their being retained in their present form for a much longer time than the Department had originally anticipated. In Ireland the schemes differ from those of a similar character provided in other countries, in this: that in addition to the money spent on the actual instruction, very considerable sums are spent by each Committee in directly encouraging the various branches of agriculture.

The schemes for 1909-10 comprised:—

1. Instruction in Agriculture.
2. " " Poultry Keeping.
3. " " Dairying.
4. " " Horticulture and Bee-keeping.

The scheme of instruction in agriculture provides for the appointment of at least one itinerant instructor in each county, who works in conjunction with the local committees. His duties include lectures on agricultural subjects, such as soils, manures, seeds, pastures, crops and their cultivation, breeding, feeding, and management of live stock; visiting farms; conducting such experiments and demonstrations in spring and summer as may be approved by the Department; supervising the sowing of the seeds and manures and keeping the experimental plots free from weeds; weighing the produce, tabulating the figures, and preparing a report on the results; assisting, if required, in the teaching at agricultural classes established with the approval of the Department; replying to letters from farmers seeking information; advising farmers how they may avail themselves of the Department's live stock schemes and of the Department's seed-testing station; advising farmers how they can best avail themselves of all schemes which may be adopted by the County Committee and by the Department, and how they may take advantage of agricultural organisation; doing, in fact, all in his power to further the interests of agriculture in the county. The duties of the horticultural instructor are, of course, *mutatis mutandis* much the same as those of the agricultural instructor.

The Department makes it a condition that the instructor must have had a first-class training in technical and practical agriculture, in order that the advice which he tenders, and which is not of a highly technical, but rather of a directly practical, character, may be based upon a sound scientific study of the problems which he has to solve and to prevent what has done so much harm to agricultural education elsewhere—the giving of empirical advice.

Closely associated with work of the itinerant instructor is the scheme for awarding prizes given by the County Committees to cottagers and occupiers of small farms for cleanliness and tidyness in their premises; for the cultivation of their gardens, and the general management of their farms in accordance with the recommendations of the agricultural or other instructor. This scheme has gradually grown in popularity. Accurate figures cannot be given for the year in which the scheme was first put into operation (1901), nor for the two subsequent years, but the number of entries rose from 3,065 in 1904 to 4,069 in 1910, and the improvement in the work done by the competitors is shown by the fact that the number of prizes awarded rose from 1,534 in the former year to 2,486 in the latter, and their value from 2,837*l.* to 4,476*l.* The scheme was in operation during 1910 in twenty-seven counties. The details of these prizes are drawn up by each County Committee in consultation with the Department's officers, except in one case where the local authority has delegated the work to another body since 1905. The Department pay the whole cost of the judging, utilising the time of their agricultural instructors, but not allowing them to adjudicate in their own counties. The fact that the county instructor, while he is occupied with this duty, is in the direct employment of the Department, is one of the chief reasons why his whole salary is paid direct by the Department, and not out of the joint fund.

A very considerable part of the income of farmers, particularly of small farmers, cottagers, and labourers, is derived from the sale of eggs and poultry. The value of these commodities exported in 1910 amounted to 3,671,168*l.* Poultry-keeping is an industry which is capable of still greater development in Ireland, where the holdings are small. The problem of developing the industry is, however, a complicated one, as experience proves that the improvement being attained by the Department's work in this branch of agriculture is not followed, *pari passu*, by an equal improvement in the price received by the producer for his produce. The fact is that this result can only be attained through the spread of the policy of co-operative marketing, a policy unpopular with many of the members of the County Committees through whom the county schemes are run. It thus comes about that the instructors, with the best will in the world, are unable to guide the poultry-keepers, in many cases, towards the solution of the marketing problem. This, those most competent to judge agree, is indispensable for the obtaining of that enhanced price for produce which is the ultimate stimulus to improved production.

The duty of the expert in poultry-keeping, who is usually a lady, comprises the following:—Under the supervision of a local committee, to deliver courses of lectures on poultry-keeping, including the selection of breeds, the hatching and rearing of chickens, the feeding and housing of poultry, and the marketing of the produce; to give demonstrations and lessons on the treatment of common diseases, the cramming of fowls, and on the plucking, trussing, and preparation of poultry for market, and on the grading and packing of eggs; to visit poultry runs, and give such practical advice as may be desired by poultry-keepers, to inspect the egg distribution and turkey stations, to report to the Department and to the County Committee regarding the progress of his or her work, and generally to promote improvement in poultry-keeping in the county. During the year 1909-10, 588 lectures were given, the average attendance thereat being fifty-six. In addition to this, 1,522 classes were held with an average attendance of eleven, and 10,198 visits were made to poultry-keepers.

The scheme provides that each Committee may give out of the joint fund a premium of 5*l.* to selected persons, who distribute during the season seventy sittings of eggs of an approved pure breed of fowl from a farm where no other varieties are kept. These stock-birds and a house are usually supplied at less than cost price. Similar regulations exist with regard to turkeys and ducks; and geese also engage the notice of the Committees.

Butter-making, as an adjunct of farm work, is another branch carried on under an instructor. The form of instruction provided in this branch extends for a period of from two to four weeks. Each County Committee appoints an instructress, supplying her with an equipment for the daily instruction of twelve pupils. The cost is paid out of the "joint fund." The teachers have been trained by the Department at the Munster Institute, Cork. The duties of the instructress, who is supervised by a local committee, are: On the first day of visiting each centre, she gives a public lecture and demonstration, and during the remainder of the course at that centre conducts a daily class in which pupils only take part, but which is open to the public. It is also the duty of the instructress to visit home dairies in the county and to give advice as required; to give where possible during that part of the day not required for class work, demonstrations in the making of butter, by means of the equipment actually in use in the dairies visited; to reply to letters from persons seeking advice on butter-making; to report to the Department and to the County Committee on the progress of her work as may be required, &c.

As the Irish farmer's income is derived mainly from live stock, the improvement of this industry was one of the chief projects which the Department were at the outset asked to take up. Various methods were suggested by which this might be done, and as there were questions of national importance to be considered, the Department thought it wise to appoint two expert committees to advise them in the matter—one for horse-breeding, and the other for cattle and swine. A yearly vote of 5,000*l.* of public money, since transferred to the Department, was at first administered by the Royal Dublin Society for the improvement of live stock, and the advisory committees recommended the Department to follow the lines of the Royal Dublin Society's schemes on the ground that they were already understood. Schemes on these lines were prepared and submitted to the Agricultural Board, who approved of them, and voted funds to put them in force. The objects of this scheme are to encourage the improvement of horse-breeding by inducing stallion-owners to keep sound and suitable sires of a high degree of excellence, and by inducing farmers to retain their best young mares for breeding purposes. The work of the scheme is divided between the Department and the County Committees. The Department annually invite applications from owners of high-class stallions to have their animals inspected for suitability and soundness. The breeds subsidised have hitherto been Thoroughbred, Clydesdale, and Shire, and during the last few years, Irish draught and half-bred sires. In the first year, every stallion offered was inspected, and the work entailed was exceedingly heavy. Breeders realise the advantage which the inclusion of their sires on the Department's register confers, and make their purchases subject to the approval of the Department's inspectors, who are sent to any part of the United Kingdom free of cost to the intending purchaser, to examine such animals.

The Department also give loans for the purchase of high-class sires, and grant subsidies varying from 50*l.* to 100*l.* to approved applicants who are prepared to purchase suitable sires, and locate them in districts where registered stallions are not already available. The loan amounts to two-thirds of the purchase price, and is repaid in five annual instalments, with 2½ per cent. interest on the outstanding balance. The animal remains the property of the Department for five years—a wise provision, as it often prevents the sale of animals for which other countries are willing to pay much more than they cost the Department.

Nominations for selected mares are also made in connection with local exhibitions. In 1910, 219 such exhibitions were held, as a result of which, 3,465 nominations were made on which a sum of 7,170*l.* was expended; of 10,804 mares

presented, roughly one-half was passed by the judges as possessing the qualities entitling them to nomination, but 606 of these were rejected at the veterinary examination.

Irish breeders, knowing well the ready demand there is for well-bred animals, are eager to obtain the use of high-class bulls, and the scheme for encouraging improvement in Irish cattle has, therefore, taken the form of subsidising the sire. To this end, County Committees annually offer a number of premiums of 15*l.* each to the owners of high-class bulls of certain breeds, on condition that small farmers of a specified valuation can have the use of such bulls at the nominal fee of 1*s.* per cow. The County Committee, having made a selection of persons from among the applicants for these premiums, refer them to the Department, whose inspectors examine such bulls as are already in the country, and attend shows and sales of bulls for the purpose of selecting new ones and assisting the nominees of the County Committees to purchase. The Department give loans to enable small farmers to buy these high-class bulls under similar conditions to those just enumerated in regard to stallions. As the insurance of this class of stock in public companies is very high (from 6 to 7 per cent.), the Department themselves insure the animals bought under their loan scheme, for which they charge only 2½ per cent. per annum, and so far the Department have not lost under this arrangement.

There is also a scheme for encouraging the improvement of swine, based on the same principles as that for cattle, which has been in operation since 1900. The premium for high-class sires is 8*l.*, payable over two years—5*l.* the first, and 3*l.* the second year. Notwithstanding an increasing demand for boars sold by the Department on behalf of breeders as suitable for premiums, the supply of suitable animals is much restricted.

In these live stock schemes a certain amount of elasticity is found necessary. For example, the selection of the particular breeds of horses, cattle, and swine which are to be selected for subsidy is left to the County Committee in each county, who also select the persons who are to keep the premium bulls and boars, and fix the valuations of the individuals who are to receive the maximum benefit from the use of these animals, as well as a variety of other matters, into the details of which it is not necessary to enter.

The following table will show the reader, who is not too scared at the sight of figures to scan it through, the details of these schemes and their cost. It will serve to put the relative importance of each scheme in better perspective than could be done by any less graphic method of dealing with this branch of the subject.

Table showing by Counties the Agricultural Schemes adopted by the several County Committees for the year ended September 30, 1910; the amount allocated from the joint fund for the purpose of each Scheme, and the proportions of the total allocation chargeable to local contributions and to the Department's Grant respectively.

County	Inter- struction in agri- culture	Winter mutil- tation classes	Poultry	Butter- making	Horti- culture and bee- keeping	Outfit- and farm implements	Live stock	Sub- sidies to show	Flax	General administra- tion, in- terest, and expenses	Totals	Contri- bution from rates	Contri- bution from depart- ment	Rat- raised
	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Antrim	410	100	482	—	10	—	1,100	275	250	880	3,197	1,323	1,874	1,880
Armagh	379	60	204	—	214	—	940	100	—	1,225	1,722	623	1,068	740
Carlow	205	70	151	—	101	—	645	200	—	1,700	2,344	951	1,840	680
Clare	330	208	208	—	273	200	1,000	200	—	2,000	2,754	1,001	1,508	1,000
Cork	620	201	70	—	255	200	1,750	100	30	245	1,113	2,430	3,683	1,981
Donegal	1,568	240	688	246	456	200	1,570	300	200	347	3,511	1,343	2,168	2,182
Down	350	140	505	140	235	600	813	300	200	347	1,001	1,589	2,188	1,250
Dublin	335	250	202	102	250	320	1,380	385	200	187	1,416	540	2,124	2,080
Fermanagh	320	—	—	—	—	50	680	175	20	85	1,416	636	870	812
Galway	310	51	139	—	276	40	437	155	20	195	1,416	636	870	850
Kerry	350	100	560	180	270	105	780	270	—	275	3,385	1,274	2,111	1,820
Kildare	350	—	380	180	203	—	780	—	—	260	2,738	773	1,360	1,162
Kilkenny	389	—	289	189	516	238	575	240	—	305	2,772	1,240	1,572	1,100
Limerick	393	260	270	104	279	142	785	260	—	280	2,753	1,123	1,610	1,134
Lisburn	315	40	218	146	169	—	431	100	—	265	1,714	672	1,042	927
Lislick	300	50	115	100	5	—	380	80	—	180	1,320	448	872	578
Londonderry	672	135	337	—	198	162	865	150	—	274	2,703	1,154	1,685	950
Longford	250	100	236	161	200	200	720	205	110	263	2,510	1,032	1,478	1,211
Louth	250	30	352	—	188	70	203	134	—	210	1,447	553	894	592
Mayo	385	75	189	189	189	—	344	144	—	180	1,799	648	1,111	800
Meath	380	200	326	189	247	280	750	250	—	385	3,455	1,242	2,213	1,213
Monaghan	350	—	309	189	247	116	637	300	80	389	3,614	1,242	2,213	1,213
Queens	380	—	309	189	247	116	637	300	80	389	3,614	1,242	2,213	1,213
Roscommon	380	—	309	189	247	116	637	300	80	389	3,614	1,242	2,213	1,213
Sligo	380	—	309	189	247	116	637	300	80	389	3,614	1,242	2,213	1,213
Tipperary, N.R.	380	—	309	189	247	116	637	300	80	389	3,614	1,242	2,213	1,213
Tipperary, S.R.	435	100	302	45	183	248	510	150	—	254	1,653	649	1,000	1,000
Tyrone	625	180	269	142	240	150	598	200	—	240	1,600	649	1,000	1,000
Waterford	370	30	171	108	177	30	848	200	—	240	1,600	649	1,000	1,000
Westmeath	380	100	345	146	191	100	1,110	275	—	240	1,600	649	1,000	1,000
Wexford	1,065	300	343	141	341	300	805	360	—	240	1,600	649	1,000	1,000
Wicklow	353	—	266	141	191	100	570	137	—	240	1,600	649	1,000	1,000
Totals	14,613	3,110	9,698	3,640	7,380	5,811	23,084	6,794	980	9,452	84,561	33,215	51,346	—

Besides the work just considered, the Department carry out a certain number of enterprises in which the business of supervision is done directly by them, and not, as in the county schemes, conjointly. Forestry presents a large problem in Ireland and can only be dealt with, at present, through the Department to a limited degree. The forestry schemes include the purchase of trees at wholesale rates for distribution through the County Committees, the instruction of the agricultural and horticultural instructors through courses of lectures, and the issue of leaflets. The most important part of the Department's forestry work, however, is the forestry station at Avondale, which estate has been purchased for the purpose of carrying out demonstration plots and giving courses of instruction to resident pupils, who thus qualify in the subject. The Department also undertake the survey of woods.

Still another of their direct schemes is the field experiments, where the manuring of crops is studied and the results tabulated for the information of farmers. A good deal of profitable work has also been done in regard to the growing of early potatoes for market and the boxing of the ordinary species of potatoes, so that they may be ready for market earlier than the crop treated in the usual way. These have been found very valuable and lucrative schemes.

Fruit-growing is dealt with chiefly through the horticultural instructor. The Department has also organised fruit shows, which have been of considerable value. They have studied the standardising of packages for the grading of fruit, and these have been used with considerable advantage to the growers. Fruit and vegetable drying and preserving, the making of jam, and the revival of cider making in Co. Tipperary are other branches of industry allied to fruit-growing which have engaged the attention of the Department.

The Department has also a branch whose business is devoted to the collection of statistics and the dissemination of useful information—the Statistics and Intelligence Branch. The work of this branch, though more strictly relating to economics than to agriculture, is indirectly of the greatest use to the farming community. It is divided into four main heads: (1) the collection and publication of agricultural and other statistics relating to Ireland; (2) the collection of information both at home and abroad on questions submitted to the Department and affecting its work; (3) the editing of the Department's *Quarterly Journal* and the press editing of other publications issued by the Department; and lastly, the distribution and despatch of reports, leaflets, and other publications. The agricultural statistics which deal with the number and size of the agricultural holdings and their distribution, the area and

produce of crops and the numbers and classes of live stock, the extent and kinds of woods and plantations and of planting and felling operations, and also of the supply and migration of agricultural labour, as well as the wages earned by the migratory labourers, are all collected yearly. Other statistics dealing with the area under fruit and potatoes, the different breeds of live stock and mortality of live stock, bee-keeping, creameries, butter factories, malt houses, corn and scutch mills, and the numbers and use of the principal kinds of farm machinery are also dealt with. Crop reports are issued annually. Annual reports are issued dealing with the prices for live stock and agricultural produce, and statistical leaflets are issued showing the exports of animals, &c. A collection of egg reports is also made, and farming inquiries of various kinds are carried on, including the question of the organisation of the dead meat trade.

The work of the Veterinary Branch is chiefly devoted to investigating and dealing with cattle diseases. Reports are issued from time to time regarding various outbreaks of disease and Orders published relating to bovine tuberculosis and epidemics in cattle, sheep, pigs, &c.

A very important part of the Department's work is carried out by the Transit and Markets Branch. In connection with this, proceedings are taken by an inspector for the enforcement of the "Sale of Food and Drugs Act" as regards the sale of butter, margarine, cheese, and milk. During the year ended December 31, 1909, 865 samples were taken for analysis in connection with the butter industry under this Act. Of these samples, twenty-nine were found to contain over 16 per cent. of water, seven were certified as consisting nearly altogether of fats foreign to butter, and one as containing 60 per cent. of fats foreign to butter. Prosecutions were instituted by the local authorities in respect of twenty of the first named samples and seventeen convictions were obtained. In the other cases proceedings were also instituted as found necessary. Special inspections are also made in connection with the Butter and Margarine Act, 1907, in premises where the Department have reason to believe that butter is either made or stored by way of trade and that, under either this Act or the Sale of Food and Drugs Act, inspection is desirable. Under the Merchandise Marks Act also the Department has powers to undertake prosecutions. No application was made to them during the period dealt with in the Department's last Report, but proceedings were taken for the sale of margarine and butter under this Act. Work of a most useful protective character is also carried out in Great Britain in the interests of the Irish agricultural industry by the Department's Inspector,

and proceedings are frequently taken in regard to eggs, butter, or other commodities offered for sale as Irish which are the produce of other countries. In fact, the work of this branch of the Department is of the most multifarious character and invokes protection of the law for Irish industries in a variety of ways.

It would not be possible in the course of this article to deal in detail with the Department's tobacco cultivation schemes, poultry fattening, peat industry, &c. Creamery management has already been adverted to in the preceding paragraphs. The miscellaneous businesses of the Department also include a certain amount of research work. Perhaps the most remarkable and valuable of their researches was that undertaken by Monsieur Nocard into the origin and treatment of "white scour" in calves, in the course of which the micro-organism which produces the disease was discovered and an effective method of treatment was laid down. Not the least of the benefits conferred on the farmers by this discovery was the establishment of the fact, generally accepted by the more intelligent observers but not definitely susceptible of proof to the man on the farm until after these researches, that it was not, as had been supposed by less well informed farmers, the skim milk which was responsible for the disease, but the lack of sufficient cleanliness and care in the treatment of the calf and its mother. Another valuable piece of research work is that which was carried on in regard to the study of various milk substitutes in calf feeding. Research into the value of certain low grade imported compound manures has also been made.

The Department's seed testing station, at which for a purely nominal cost seeds are examined and reported upon, has been of the greatest service. During the year 1909-10, 1,051 farmers and 190 merchants availed themselves of this station, and the Department themselves tested 507 samples under the Weeds and Agricultural Seeds Act, 1909, and 203 other samples. Under the Fertilisers and Feeding Stuffs Act, also, samples of both fertilisers and feeding stuffs have been examined. Of course innumerable smaller details go to make up the full volume of the Department's work, but enough has been said to show its main direction. There still, however, remains the work done in the Irish Congested Districts, in which, also, the Department's remedial and educative influence has been in operation, and which must be briefly noticed.

It is in the wild and often barren stretches of Western Ireland that the Congested Districts Board works. A reference to their last Report, published in 1911, shows that the difficulties of the problem have called forth no less than ten Acts of Parliament. The administration of State aid to

agriculture in these "congested districts" has been much complicated by this legislation. It is, perhaps, well to state for the information of readers unacquainted with them that the term "congested district" has a definite and technical significance. A congested district in Ireland is determined chiefly by two factors: firstly, of course, by the population, but more particularly by the nature of the land from which the people in the district seek to obtain their subsistence. A typical congested "holding" consists in many cases of a tract of land of a boggy or rocky nature and of little agricultural value, but including a small cultivable portion, making in all a comparatively large farm of which only a small proportion is really suitable for farming. On the other hand, many of the holdings are uneconomic not in virtue of the quality of the soil or its unfitness for cultivation, but because each patch of land is too small to "maintain its man." Some of these "farms" are split up and sub-divided to quite an amazing degree so that one holder may have a dozen or more different plots none of which are fenced off from his neighbours'.

When Mr. Arthur Balfour brought the Congested Districts Board into existence in 1891 it was expected that his remedial legislation, being of a curative character, would have had the effect, through gradually ameliorating the condition of these districts, of reducing the area covered by the word "congested." The Land Act of 1891 defined a Congested Districts County as formed of electoral divisions of which "the total rateable value of more than 20 per cent. of the population give when divided by the number of the population, a sum of less than 30s. for each individual." The tendency of recent legislation, however, and particularly the Land Act of 1909, has been not to contract but to expand the area dealt with by the Board. In the 1909 Act "a congested holding" is defined as "a holding not exceeding 7 $\frac{1}{2}$ in rateable value," and "a congested townland" means "a townland in which more than half of the holdings are (a) congested holdings, or, (b) holdings whose aggregate rateable value when divided by their number gives a sum of less than 7 $\frac{1}{2}$ for each holding." The original area dealt with by the Congested Districts Board embraced part of each county in the province of Connaught and part of Clare, Cork, Kerry, and Donegal. As a result of Mr. Birrell's Act of 1909, however, the congested districts area now includes the whole of the counties of Donegal and Kerry, the whole province of Connaught (that is the counties of Leitrim, Sligo, Roscommon, Mayo, and Galway) and six rural districts of Co. Clare, and four of the rural districts of Co. Cork, roughly a third of Ireland in all. What is a still more marked departure from the original scope and work of the Congested Districts

Board is that under the 1909 Act the agricultural work with which the Board was previously concerned has been transferred to the Department of Agriculture and Technical Instruction. Section 47 of the Land Act of 1909 provided that certain powers and duties previously relating to the congested districts would be taken over by the Department, namely, "the provision of seed potatoes or seed oats; agricultural instruction or practical husbandry; and the aiding and developing of forestry and the breedings of live stock or poultry."

The work of the Congested Districts Board, prior to that Act, divided itself into three periods. First came a period from 1891 to 1900, in which all the work done by the State towards improving the agricultural conditions of this part of Ireland was that carried out by the Board. (It is perhaps, however, well to point out that the work of the Irish Agricultural Organisation Society, a voluntary association which was employed on the agricultural problem since 1894, penetrated the congested districts, and that the Board, at various times and in various ways, worked in conjunction with and sometimes aided some of the schemes of the I.A.O.S., notably the establishment of agricultural banks.)

The Board's annual income during this period was approximately 54,850*l.* a year, including payments made directly by the Treasury for the salaries of the permanent official staff and for the travelling expenses of members of the Board. The nett expenditure was from 41,343*l.* for the year 1892-3 to 56,954*l.* for the year 1899-1900. An excess of expenditure over income was incurred but was provided for in the first four years by applying to general current requirements 50,000*l.* taken with the consent of the Lords Commissioners of the Treasury from the Fishery Funds. In the year 1898-9 the Board borrowed 10,000*l.* from the Commissioners of Public Works for repayment in ten annual instalments, and sold 6,036*l.* Consols belonging to the Irish Reproductive Loan Fund. During the year between 1st April, 1899 and the 31st March, 1900, when as yet the Department of Agriculture had not got to work, the Board administered out of these funds 16,400*l.* in grants, &c., for agriculture and 1,144*l.* were advanced as loans for agricultural purposes. The greater part of the Board's income, however, was devoted to the purchase of estates. The agricultural scheme included advice as to the management and improvement of land and stock, lending farm implements, inspecting live stock in connection with various live stock schemes, and looking after example holdings and experimental and example plots. The live stock schemes included horse breeding, cattle breeding, the eradication of scab, &c., from sheep, and sheep dipping. Minor schemes were also put into operation

for the improvement of cattle, asses, and swine, and the improvement of the breeds of poultry engaged a good deal of attention with very satisfactory results. The Board also devoted a great deal of attention to bee-keeping and potato spraying. Grants were made for cottage dairies and the calf feeding experiments which were carried on.

The second period of the Board's activities took place after the formation of the Department of Agriculture, which led to some temporary complication. The difficulty was caused by what appears to have been an oversight in the drafting of the Agriculture and Technical Act of 1899. The situation was this :—The Department's agricultural endowment of 100,000*l.* was ear-marked for the non-congested portions of Ireland, and could not therefore be applied to an area scheduled as congested. Neither could the Department apply funds to a district in respect of which a rate was not raised for the purpose of their Act. But the unit of area adopted in scheduling a district as congested was not co-extensive with the unit of rating under the Local Government Act. A way out had to be found, so it was decided to raise the rate for the purpose of the Department's work over the non-congested and mainly non-congested rural districts, and to exclude the congested and mainly congested rural districts, these being therefore administered through the Board as before.

From 1904 on, however—the third period of the Board's activities—the Board, after the passing of an Act in 1902, enabling the County Councils to include all non-congested and exclude all congested electoral divisions from the rate, decided that their funds, hitherto applied to agricultural development, should in future be diverted from the purpose and be applied primarily to land purchase. From 1903 to 1909, therefore, the Department's County schemes were applicable to the congested districts. These schemes were supplemented, where the Department thought advisable, by special teaching in agriculture, dairying, poultry-keeping, horticulture, bee-keeping, rural domestic economy and cottage industries. Since 1909, of course, all the work relating to the improvement of agriculture in the congested districts devolves upon the Department, and in a most thoughtful and able Memorandum prepared by Mr. J. R. Campbell, Assistant Secretary to the Department, in connection with the evidence given by him before the Royal Commission on Congestion in Ireland (which the interested reader ought to consult) the special agricultural needs of congested areas are discussed with a view to future work in this part of Ireland.

The last published Report of the Congested Districts points to yet another direction in which improved agriculture may

be developed. In the case of "settled" estates, that is, estates newly purchased for tenant owners and taken over by them under the Land Acts, the Board state: "We have been most anxious to have agricultural instructors placed in the neighbourhood of colonies of migrants provided with holdings on lands that had been for many years used as grass farms. . . . We have recently arranged with the Department of Agriculture and Technical Instruction that they will rent or purchase from us an ordinary type of holding with buildings thereon in some of the districts where the colonies of migrants have been placed, so that an Instructor living among them would be in a position to give instruction and advice to such migrants in approved methods of farming."

Besides the instruction and aid given to agriculture in Ireland by the Department of Agriculture and the Congested Districts Board, there is one other public department which employs some at least of its resources in the interests of Irish agriculture. The Board of Works has for a number of years been granting loans for the drainage of farm land, the planting of trees as shelter belts, the erection of farm buildings, the fencing of land, and the construction of farm roads. These loans have since 1881 been available for tenant farmers. Previous to then they were applicable to landowners only. They are repayable, principal and interest, in annual instalments, in twenty-two years at $6\frac{1}{2}$ per cent. Including in the loans granted for these purposes both those given to tenants and those given to land owners, the latter, of course, now including tenant owners, a sum of over 6,221,000*l.* has been lent out by the Board in these ways during the course of its operations.

The story of State Aid to Agriculture in Ireland, as has been seen, consists of two very different phases, one during which the theory of *laissez faire* was allowed to jeopardise the future of Irish farming to a dangerous degree, and one during which State aid has been freely drawn upon for the improvement of the greatest Irish Industry. What the future may hold for agriculture in its relations with the State it would be unwise to forecast, but there is no doubt in the minds of the well informed that our farming will depend for its success mainly upon the degree in which self help and State aid work hand in hand.

HORACE PLUNKETT.

WOOL.

BY ALDRED F. BARKER, M.Sc. (Leeds),

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IT is not remarkable that the wool manufacturer should interest himself in sheep breeding only in so far as such directly affects the wool grown: but it is remarkable that the sheep breeder should concern himself almost entirely with the mutton qualities of his breeds and should study wool qualities so very inadequately. It may be true that in very many cases the mutton factor is absolutely dominant; yet it must not be forgotten, that so far as the fleece is concerned, both quality and quantity are involved, and again that while the sheep can yield but one carcass, it may yield several clips of wool. In short it must be evident that the sheep breeder who ignores the wool factor is usually failing to take full advantage of the breeding possibilities of his flocks and is not reaping the full monetary advantages which should be his due.

This lack of interest on the part of the farmer is probably attributable not only to the dominance of the mutton factor, but also to the violent fluctuations in the value of the wool and to the apparent impossibility of gauging the market; one year the wool will be hardly worth clipping, the following year the farmer may pay his rent with it.

The present article is designed to bring within the farmer's apprehension the main points respecting wool which influence its manufacturing qualities, in order that he may be inspired to pay closer attention to the wool he produces, to the ultimate advantage of both himself and his customer, the wool manufacturer.

Variations of the Wool Fibre.—A very casual inspection of a sheep, even in the open pasture, will serve to show that a fleece of wool is not uniform. At the brith it is evidently long and stringy, and indirectly it suggests coarseness; while the even compactness of the wool on the shoulders suggests a level staple and fineness. The difference between staples of wool taken from the haunches and those from the shoulder is well illustrated in Fig. 1, A and B. To the superior manufacturing qualities of B as compared with A we shall refer later.

Roughly speaking, all sheep have a tendency to produce coarse, long, stringy wool on the haunches, and fine even stapled wool on the shoulders, but the exact position and quantity of fine and coarse wool varies in different breeds. In

Fig. 2. A and B, Lincoln and Merino fleeces are analysed for fineness of fibre and levelness of staple. It will be noticed that after skirting the fleece, three, four or five grades of wool may be made according to the standard of uniformity required by the manufacturer.

The last illustration naturally leads one to refer to the varieties of wool produced by the different breeds of sheep. Each typical breed produces a characteristic wool which may be fine, medium or coarse—within its own limits—according to its position on the animal. Hence fine Lincoln must not be compared with fine Down wool, nor must coarse Down wool

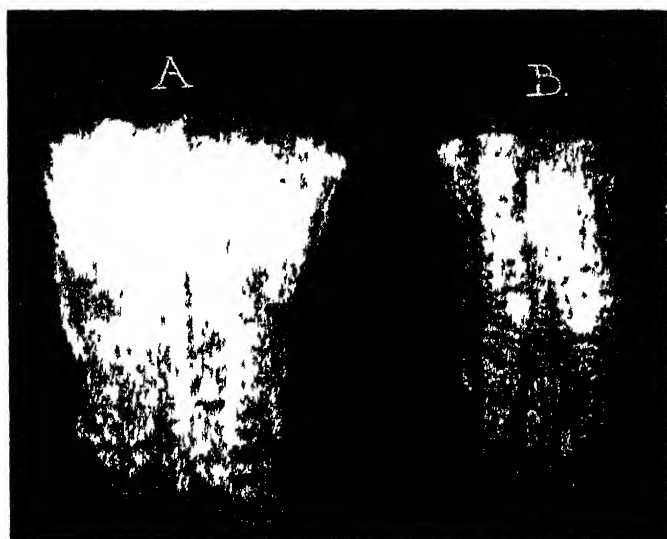


FIG. 1.—Wool Staples from (A) Haunches; (B) Shoulder

be compared with fine Lincoln wool—for the Down wools are crisp and frizzy and curly, and the Lincolns are long and straight and lustrous.

In the British Isles there are really two dominating breeds of sheep from the wool point of view, each with many and valuable varieties, each producing a characteristic wool; these are:—

- (1) Lincoln and Leicester sheep, producing what are termed the long lustre wools; and
- (2) Down sheep, producing relatively fine, fuzzy, curly wools.

Characteristic staples of these two classes of wool are shown in Fig. 3.

Brief consideration on the part of even the uninitiated will suggest that the manufacturing operations for the long, straight fibred wool may be different from the manufacturing operations for the short stapled wool; and further, that each material when manufactured will possess distinct characteristics.

The characteristics of the manufactured article will be dealt with later; the characteristics and varieties of the wool fibre itself must here claim definite consideration.

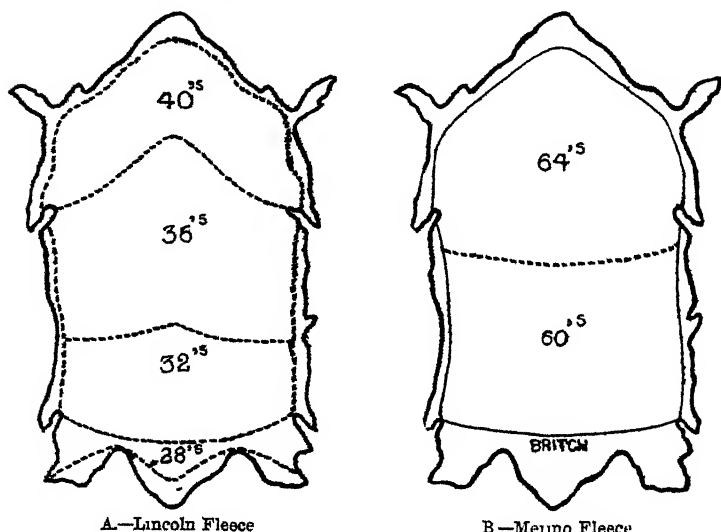


FIG. 2.

The numbers represent the quality of Wool on the respective sections of the fleeces, and thus indirectly indicate the fineness of fibre, the 64's section being the finest, and the 28's section the coarsest.

Chemically, wool, from whatever sheep it is taken, is wool, and varies little in its composition and properties, but physically there are most marked differences. Thus, the physical properties of fineness, length, curliness, lustre, colour, felting property, and strength, must all be taken into account in dealing with the so-called "qualities" of the various wools. Sometimes, as in fine, soft wool cloths the quality of fineness and the accompanying softness is dominant. At other times length and lustre are especially sought for. Very often, curliness, and its accompanying felting or shrinking quality, is sought for, and occasionally a fine white colour is essential. Thus it has come about that the various typical breeds of

sheep have usually been noted for special wool characteristics as already indicated, and if the breeder, without damage to the mutton-producing qualities of his animals will endeavour to attain to a reasonable standard of wool uniformity—not allowing his flocks to degenerate into animals producing a nondescript variety of wool—it will almost certainly be advantageous both to himself and to the manufacturer.

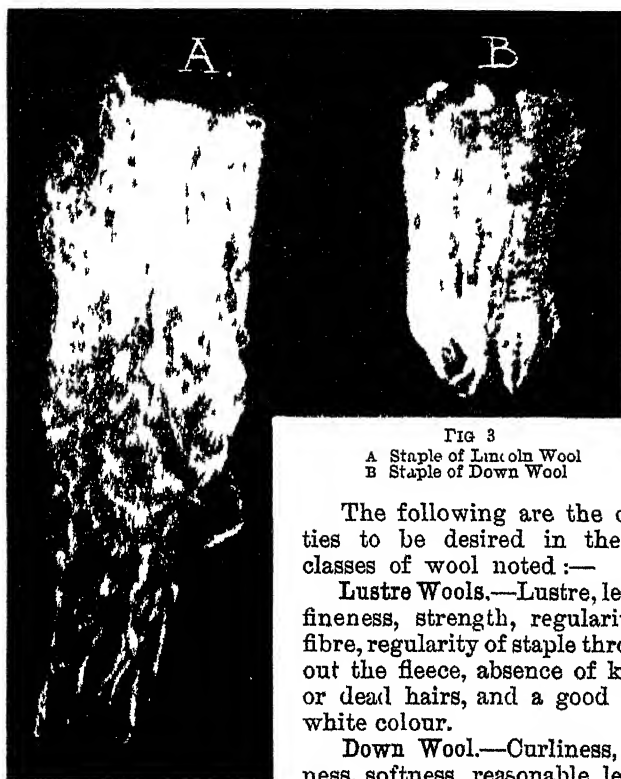


FIG 3

A Staple of Lincoln Wool
B Staple of Down Wool

The following are the qualities to be desired in the two classes of wool noted :—

Lustre Wools.—Lustre, length, fineness, strength, regularity of fibre, regularity of staple throughout the fleece, absence of kemps or dead hairs, and a good clean white colour.

Down Wool.—Curliness, fineness, softness, reasonable length, strength, absence of grey hairs,

regularity of fibre, regularity of staple throughout the fleece, and a good clean white colour.

It will be noted that certain properties are common to both types, and that others appertain to one or the other. These latter characteristics will be better understood after the various manufacturing processes have been carefully considered.

As already intimated, there are many variations from the two types cited. Thus, there are the demi-lustre wools, such

as Romney Marsh and North Country wools, and there are Oxford and Shropshire wools, variations from the typical Down class. But in such a short article as this a bold outline sketch only is possible, hence no lengthy reference to the intermediate classes will be made, but the farmer may very easily draw his own inferences and conclusions.

The Influence of Breed and Environment.—Sheep are now so varied in breed characteristics, and each typical breed is so stable that the fact of breed influence does not need proving; it is self-evident. On the other hand the influence of environment is much more difficult to realise. It seems probable that the wonderful wool producing possibilities of the Australian continent were first suggested by the direct effects of climate, food, &c., on certain rough-woolled East Indian sheep taken over to Sydney by the early settlers, towards the end of the eighteenth century. Another example of the direct action of environment is the production of the Lincoln sheep and wool in certain rich pasturage districts of Yorkshire and Lincolnshire; both sheep and wool being said to deteriorate in other districts but comparatively few miles away. No doubt the recognised breeds of sheep are the result of a combination of these two dominant factors "breed" and "environment." But before further illustrating this point more definite reference must be made to each.

The present-day breeds of sheep have been originated by—

(1) The selection of favourable variations—mutations as they are termed; these, so far as is at present known, following no recognised laws; and

(2) The re-combination of certain qualities appertaining to two or more distinct breeds in a new individual.

Given variations and breeds of sheep may be improved by either weeding out undesirable individuals or by breeding from those showing the most favourable variations. So far as ewes are concerned the first method is obviously most applicable, for the breeder will wish to breed from as many ewes as possible, and consequently the most that he can be expected to do is to weed out undesirable individuals. A good example of this occurs in the case of the black sheep, which are continually thrown in the case of Wensleydale and some other breeds. These black individuals are invariably killed off the first year and are never bred from unless for special purposes, as, for example, in the case of a special black flock in Australia. With the male sheep the conditions are far otherwise, for as one ram will serve many ewes a smaller and more perfect selection may be made without much trouble or expense.

Although many sheep farmers are of the opposite opinion, it seems probable from the scientific explanation of the factors

involved that it matters little whether the cross is made through the male or through the female. It is obvious, however, that the greater number of females in the normal environment will usually be the basis of any cross, the male sheep being an introduction from another district or country. It is obviously the duty of the sheep breeder to look out for favourable variations and to work on such for the improvement of his breed; but the very question of variation is so mixed up with cross breeding that it is equally important to be fully conversant with the most recent Mendelian investigations, as such are throwing much light on the principles of breeding. It may also be equally true that empirical sheep breeding may throw much light on the principles of heredity as interpreted by Mendelism.

If a sheep were a unit factor and not a conglomeration of innumerable factors sheep breeding would be readily dealt with on Mendelian lines. But such is not the case. So far as can be judged from the experiments carried out by Professor Wood on the Cambridge University Farm the case of crossing sheep appears to be somewhat analogous to that of the blue andalusian fowl.¹ The first shows an intermediate form in some sense between the two parents, and the second cross shows reversions to the parental form, and further production of first cross varieties which will probably show certain differences. There is a saying in Australia—two generations to find a breed, and seventeen to fix it. Working on the lines already initiated by Professors Bateson, Wood, Punnett and others, it does seem probable that at least the seventeen generations may be considerably limited. But there is much work yet to be done in this direction and assistance is much needed by those who hold large flocks. The problem of how to eliminate the black sheep from the Wensleydale breed for example, is one full of interest. It is probably recessive and will breed true with itself; but to eradicate it from the breed is a more difficult problem. Incidentally it may be noted that to the manufacturer the eradication of single black hairs in otherwise white fleeces is of even greater importance.

Although the influence of environment has been very fully discussed, and at least partially investigated, still so far as sheep are concerned there is practically little certainty. For example, although it is generally considered impossible to grow Merino wool in this country, there are no reliable

¹ See Darbishire's *Breeders and the Mendelian Discovery*. This suggestion has been brought into question by the research work of Mr. J. Bailey, of Cambridge University, recently carried out at the Bradford Technical College; and also by certain experiments in the crossing of cottons.

records of either the direct or indirect action of environment on the Merino sheep—no flock of Merino sheep has been kept for several years so that one might note the change in fleece year by year, nor have several generations been raised to note the influence of environment on the race as distinct from individuals.¹

It is more than probable that both quality and quantity of food markedly affect the fleece. Down sheep never produce the skins or pelts that Lincoln sheep produce, in fact the pelt of the richly fed Lincoln at its worst—say fully woolled—is better than the pelt of the Down at its best, say a month after shearing. Full woolled skins or pelts are much poorer than pelts from sheep killed about a month after the wool has been sheared, that is when the vital forces of the sheep are not called on to sustain the wool and consequently have strengthened the pelt. It has been noticed in Australia that richer food may result in coarser wool being produced, and undoubtedly there the poorest grazing land, just as in this country, produces the finest wool.

Length, waviness, lustre and felting property are probably more dependent upon breed than upon environment; but colour and strength are probably more dependent upon the direct action of the latter. A Lincoln sheep cannot be made to produce “fuzzy” wool by any change of environment, nor can a Down sheep be made to produce Lincoln wool even if bred and fed upon the richest pasturage.

On the other hand most of the wool in the north of England was weak about half way up the staple one year, owing to a very sudden and severe storm which no doubt lowered the vitality of the sheep, thus causing the withdrawal of nourishment from the wool inwards.

In most cases, however, the best results are observed and produced from a suitable working together of breed and environment. How necessary this coincidence is will be gathered from the case in which something like 75 per cent. of a flock of Vermont-Merino cross perished in the Australian drought while the pure Australian Merino survived.

The question of the relative values of wool and mutton must now be considered; and as a secondary question of a similar importance the relative values of heavy and light fleeced sheep must also be touched upon.

Perhaps the extremes in both cases may best be met with in Australia. The following examples rather tend to show that

¹ Since writing this I have heard of two Merino flocks—one in Yorkshire and one in Essex—but there appear to be no reliable records of the quality of wool produced

upon the whole it pays better to grow a medium wool and a large carcass than to produce a fine true merino wool and a small carcass:—

<i>Vermont-Merino.</i>			<i>s. d.</i>	<i>Australian Merino.</i>			<i>s. d.</i>
Carcass	.	.	—	Carcass	.	.	—
Wool ¹	.	8 lbs. @ 8d.	= 5 4	Wool	.	4 lbs. @ 11d.	= 3 8
Total			<u>5 4</u>	Total			<u>3 8</u>

<i>Cross-bred (Shropshire × Merino).</i>			<i>s. d.</i>
Carcass	.	120 lbs. @ 1½d.	= 16 3
Wool	.	9 lbs. @ 8d.	= 6 0
Pelt	.	1½ lbs @ 4d.	= 0 6
Total			<u>22 9</u>

It is but fair to add that among Yorkshire merino spinners at the present time there is such a tendency to demand a really fine merino and to pay for it, that the conditions noted above may possibly be changed owing to the enhanced value of the true merino wool.

Fortunately in this country the differences noted above are not to be met with. When the early maturing of certain of the Down breeds is taken into account, and also the fact that good Down wool usually brings top price, there is little to choose in the end between the best lustre wool sheep and the best Down wool sheep. Upon the whole the tendency seems to be to use the various Down breeds for crossing more and more with Blackface and even Lincolns, but this is probably entirely from the carcass value point of view.

The wool value per sheep, however, is at least partially dependent upon fashion. If alpacas and lustres are in fashion long lustre wool pays distinctly best; while if soft goods are in fashion Down wool pays best. This point may be illustrated as follows:—

<i>Southdown.</i>	<i>s. d.</i>	<i>Blackface.</i>	<i>s. d.</i>
Weight of fleece, 5 lbs. @ 1s.	= 5 0	Weight of fleece 7 lbs. @ 4d.	= 2 4

As previously remarked the same principles obtain in dealing with Merino and the various Merino crosses.

The conditions under which wool is grown in this country are so diverse and the requirements of the manufacturer are so changeable that it seems impossible to do more than lay down very general principles and further to promote, so far as may be, the association of breeder and manufacturer. Too often the manufacturer stands off feeling that any advice he gives one year may be to his disadvantage or to the advantage of a rival

¹ Only yielding 40 to 50 per cent. clean wool.

buyer next year ; while the farmer too frequently has not taken advantage even of the few opportunities afforded of making himself familiar with what would best meet the manufacturer's requirements. Broadly the two interests are identical and much is already being achieved by the Bradford Chamber of Commerce and similar bodies in bringing these two interests into unison. The following points are specially worthy of the sheep breeder's attention as they represent the wool manufacturer's requirements :—

1. **Unity of Type.**—Individuals among the best flocks vary considerably, and so far as possible those individuals which produce the most uniform fleece in combination with the best quality of wool should be selected for breeding purposes.

Take for example a Romney Marsh flock : a glance will show individuals bearing long, straggly, coarse wool on their hind quarters while others will show a fairly uniform fleece all over the body. The former should undoubtedly be weeded out.

The writer well remembers dealing with this problem when lecturing before the Bradford Wool Sorters in the presence of a representative of the New South Wales Government who was very much taken with the idea of a uniform fleece. After the lecture, this gentleman specially commended this point to the audience forgetting that the livelihood of these particular workers was dependent upon the variations in wool fleeces. such as he would have eliminated. With all due deference to the wool sorters, however, such differences as are shown in Fig. 1 should be bred out if at all possible.

Total individual variation even in the same flock is also to be noted and it may be taken as a truism that that fleece which is finest, silkiest, most lustrous, softest and curliest is the best. Whether they be Lincoln or Down, stringy, dull, opaque, coarse and hairy looking fleeces are to be condemned. Sheep producing fleeces with any tendency to a dark colour or worse still with grey or black hairs intermingled with the dominant white wool should be most rigorously condemned.

2. **Soundness of Staple.**—Upon the whole this is more dependent upon climatic conditions than upon breed, but from personal experience of human nail growth during health and illness we infer that to produce sound wool a healthy body must be maintained ; and for this regular and suitable food together with protection from sudden weather changes are very advisable. It is possible that some breeds or rather crosses may tend to produce faulty wools in this respect—Sydney wools, for example, were noted for such defects—but as a rule it will be found to be not a question of breed but of environment.

3. **Freedom from Vegetable Matter.**—Vegetable and other foreign matter may get into the fleece from the sheep being

pastured in fields which are not partitioned by clean fences, or very frequently owing to carelessness in pasturing the sheep after washing. In this latter case the wool being freed from its load of grease is liable to pick up bits of straw and vegetable matter, and as these are very difficult to get out of the fleece considerable damage is done to the wool and consequently it would not bring top price. To-day a manufacturer would far rather have to deal with real burrs in wool than with moiety, straw-laden wool. Whole burrs can be taken out mechanically with ease: bits of vegetable matter must be carbonised out with acid to the marked detriment of the wool (see Fig. 4).

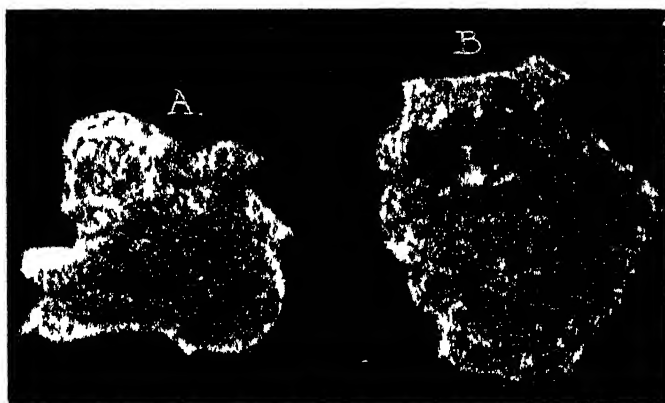


FIG. 4—A Moiety Wool. B Burry Wool.

4. "Get-up" of Fleeces and Packing.—Too often between washing and shearing sheep are left under conditions adverse to the production of the best possible fleeces. During the days which elapse between washing and shearing every care should be taken of the fleeces. After shearing the fleeces should be tied up with their own wool and on no account with band or any foreign binding. A few experiments in the folding of a fleece will soon get the shearer into the right method (see Fig. 5).

5. Washed v. Unwashed Fleeces.—The battle of greasy and washed wool was fought in Bradford years ago resulting in a victory for the greasy condition with certain reservations. It seems more than probable that the potash salts sent down our rivers every year from sheep washing stations represent a considerable monetary loss. Of course it may be argued that railway rates are against transport in the grease and this no doubt is true: perhaps truer for English wools than for Colonial



FIG 5—A Fleece folding



FIG 5.—B Fleece folding.



FIG 5—C Fleece folding



FIG 5—D Fleece folding

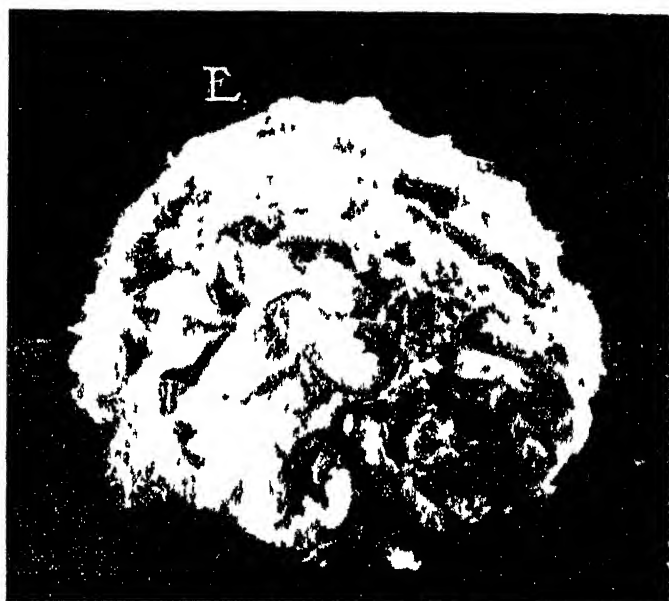


FIG. 5—E Fleece folding Final stage

wools, strange as this may seem. This is only a partial answer, however, as in the writer's opinion the marked success of the Bradford Corporation in reclaiming various products from the wool-combers' wash-waters is worthy of most careful consideration on the part of those farmers who make no endeavour to reap any monetary gain from these waste products (see Fig. 6.) So far as the buyer is concerned it is popularly said that a lustre wool may be better judged in the washed state and a merino in the grease. There is no doubt something in this, especially if the Vermont-Merino be excepted.

Quality of Wool.—Although the term "quality" has already been at least partially defined, some further definition is necessary as the term is of such every-day use in the manufacturing world but is so difficult of comprehension by those not actually working in this particular world. For example, during the high prices prevailing for Merino or Botany wools in 1899 cross-bred and lustre wools were almost proportionately low, with the result that there was a fearful gap in price between even a 50's and a 60's quality. A standard 60's combed top was worth about 34½d. per lb., while a standard 40's was worth only 13½d. per lb.; and a

proportionate difference was maintained nearly up to a 56's quality of wool or top. The importance of the quality number is therefore most evident.

The simplest definition of quality is "fineness of fibre." As a rule, however, there is a concomitant variation in length, fine fibres being short (say 5 in.), and coarse fibres being long (say 12 in.) This is not invariably so, as in the museum of the Bradford Technical College are exhibited fine Merino staples up to 12 in. or 16 in. long while some cross-bred staples are there shown between 30 in. and 40 in. long. These, however, are abnormal growths—probably of two or three years—and the additional length is of no real assistance to the manufacturer.

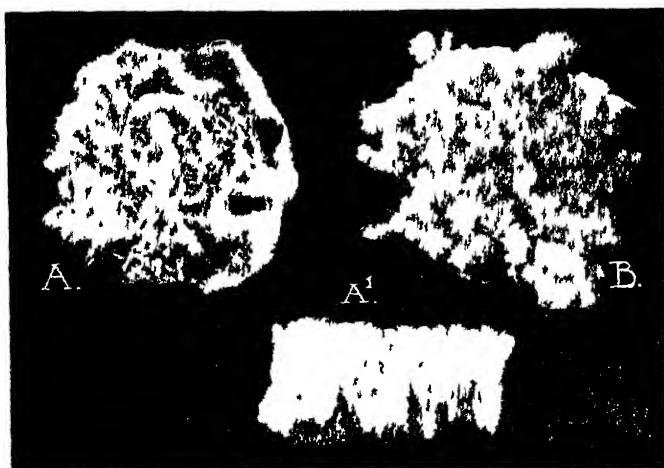


FIG 6

A—Greasy Wool, A'—Staples of Merino showing dirty tips B—Scoured Wool

The four accompanying illustrations (Fig. 7) in conjunction with the following list¹ give a good idea of what "quality" really means to the manufacturer.

There is a more refined use of the word "quality" which is scientific rather than technical. Thus, there is a difference between a 60's Australian and a 60's South American wool, in which the physical texture, and possibly chemical composition of the fibre is probably involved. The term quality in this sense, however, is practically never used in the trade.

¹ Specially compiled at the Bradford Technical College by Mr. Edford Priestley, Lecturer in Combing and Spinning.

24. Range of Bradford Tops : Details of Qualities.

No.	Quality No.	Length (in inches)		Lustre or Colour	Handle	Soundness	Fineness (Average)	Waviness	Uniformity	Probable Breed or Breeds	Count of fibres per unit limit	Uses	Market Value April, 1909 (Pence)
		Long	Short										
		15	5	10									
1	25's	15	5	10	Greyish Non-lustrous	Harsh	Weak and Brittle (Kempy)	1/200" to 1/400"	Straight	Irregular	Low Scotch and Low English	Carpet, Low Hosiery, &c.	9
2	32's	13½	6	9	Fairly lustrous	Fairly Harsh	Weak	1/400"	Straight	Irregular	Fine Scotch Medium English Low Crossbred	Low Lustres and Serges	10½
3	36's	12½	8½	10	Fairly lustrous	Fairly Soft	Fairly Sound	1/500"	Straight	Fairly Uniform	Fine Scotch Medium Crossbred	As No. 2	11½
4	40's	12	8½	10	Very lustrous	Soft	Sound	1/600"	No waviness clearly defined	Uniform	Best Scotch Medium Crossbred Fine English	Best Lustres, Dress Serges and Medium Suitings	12½
4A	40's (Preparer)	9½	5	7½	Lustrous	Soft	Sound	1/600"	Slightly Wavy	Uniform	As No. 4, but slightly shorter types	Lustres, Dress Serges, Medium Suitings	11½
5	44's (Preparer)	11	8½	10½	Very lustrous	Soft	Very Sound	1/650"	No clear waviness	Very Uniform	Best English Lustre and Colonial Crossbred Wool	Best Lustres—Dresses and Linings	13½
6	46's	9	4½	7½	Fairly lustrous	Harsh	Sound	1/700"	4 Waves per inch	Uniform	Shorter British Wools & Medium Crossbreds	Fine Serges, Hosiery and Medium Crossbreds	15½
7	50's	7½	3½	6	Lustrous	Fairly Harsh	Sound	1/750"	10 Waves per inch	Fairly Uniform	Down Wools Fine Crossbreds Low Botanies	Fine Serges, Medium Coatings and Hosiery	17
8	50's	6½	2½	5½	Yellowish in colour	Fairly Soft	Sound	1/800"	14 Waves per inch	Fairly Uniform	Fine Down Wools Crossbreds and Low Merinos	Medium Coatings and Dress Goods	22
9	53's	6	3	5	Fairly White in Colour	Fairly Soft	Sound	1/850"	20 Waves per inch	Fairly Uniform	Strong Merinos	Cheap fine Worked Coatings and Dress Goods	23½
10	60's (Warp Qual.)	6½	2½	5½	Fairly White in Colour	Soft	Sound	1/1000"	24 Waves per inch	Fairly Uniform	Fine Crossbreds Merino skin and Piece Wools	Fine Coatings, Dress Goods, Hosiery, &c.	25
11	64's	5	2½	5½	White in Colour	Soft	Sound	1/1200"	28 Waves per inch	Uniform	Strong Merinos Piece and Skin Wools	Fine Coatings, Dress Goods, Hosiery, &c.	26
12	70's	4½	2½	5½	White in Colour	Very Soft	Sound	1/1400"	32 Waves per inch	Uniform	Fine Merino (Classed fleece)	Very Fine Coatings and Dress Goods	28½
13	80's	4½	3	5½	Very White	Very, very Soft	Very Sound	1/1400" to 1/1700"	36 Waves per inch	Very Uniform	Fine Merino (Sorted fleece)	As No. 12	30
14	90's	4½	3	4	Very White	Very, very Soft	Very Sound	1/1700" to 1/2200"	36 Waves per inch	Very, very Uniform	Fine Merino (Sorted fleece)	As No. 12	34

Standard for Comparison
— 40'sStandard for Comparison
— 60's

Having stated the manufacturer's requirements so far, it may now be desirable to give an outline sketch of wool manufacturing processes, as such should at least interest those who grow the raw materials, and may possibly lead to some suggestions of importance to both farmer and manufacturer.

1 Wool Scouring.—Wool is usually delivered to the manufacturer in a greasy state and must be cleansed before it can be mechanically treated. In some wool scouring machines the wool is held and the scouring liquor forced through it;

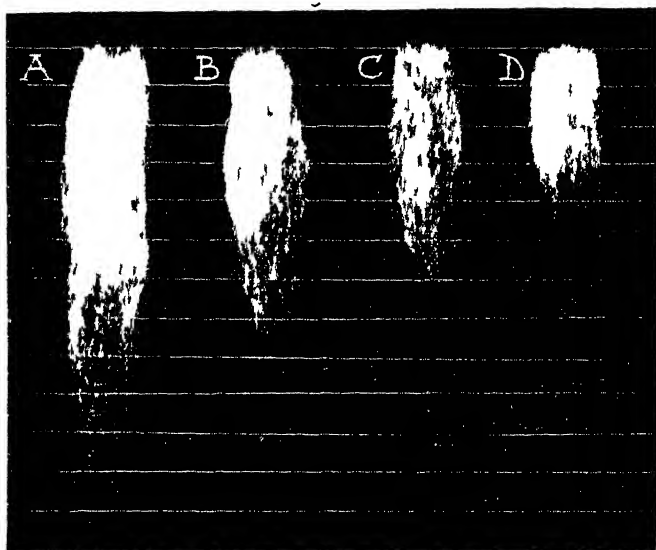


FIG 7
FOUR QUALITIES OF BRADFORD 'TOPS'
A—12 s quality (Gill-box prepared)
B—44 s quality (Gill-box prepared)
C—50 s quality (Carder prepared)
D—60 s quality (Carder prepared)

NOTE—The horizontal divisions equal 1 in, so that the longest fibres in A are about 1.5 in long

in others the liquor is practically stationary and the wool is passed through it; and finally, in machines of the best types, the wool is immersed in the liquor, but is floated as well as forked forwards. It may seem strange, but the greatest difficulty in wool scouring is to get the wool out of the bowl. This also is accomplished by floating it out with the scouring liquor. Thus it will be evident that a modern scouring bowl is a very scientifically constructed machine. When the

physical and chemical activities involved are also taken into consideration it must be evident that wool washing is an operation of considerable fascination to the scientist.

2. **Wool Drying.**—Some wools leave the wash bowls with just the right amount of moisture to ensure satisfactory working in the subsequent machines. Other wools are too wet and must be dried. Various drying machines of ingenious construction are placed on the market, most of which claim to dry the wool quickly, regularly, and without burning it.

When wool has been thus dealt with it is ready to be spun into yarn by one of the three following methods :—

(a) It may be carded and mule-spun into woollen yarn.

(b) It may be prepared, combed, drawn and frame-spun into English or lustre yarn.

(c) It may be carded, combed, drawn and frame or mule-spun into botany or hosiery yarn.

3. **Woollen Yarn Production.**—In this case the locks or fibres are teased out and thoroughly mixed up head to tail and tail to head until eventually a thin regular film of wool fibre is obtained. This is termed carding. This film is then divided up into continuous strips or threads, wound on to bobbins and taken to the mule to be spun. This spinning operation consists in elongating these strips or threads at the same time that they are twisted, with the result that a fine, regular, well-twisted thread results. These operations are illustrated in Fig. 8.

4. **Lustre Yarn Spinning.**—In this case the fibre is straightened out in preparing boxes and eventually got into a thick sliver form in which the fibres lie longitudinally. This sliver is then combed, *i.e.*, all the short fibres are taken out, forming what is termed “noil,” and the long fibres are arranged almost mathematically parallel in the re-formed sliver. These slivers are then reduced to a thin, level thread by combining several of them to form one thick sliver, but in the following process drafting or extending this compound sliver so that it is rather thinner than any of the original single components. As soon as the required fineness and regularity is obtained the necessary twist is inserted and a strong thread thus produced. A drawing frame consists of a slowly revolving pair of back rollers delivering the slivers to a quickly revolving pair of front rollers which thus elongate or draft them. There is also an apparatus for winding the worked sliver on to bobbins. A flyer spinning frame both draws out into a fine thread and also twists the slivers fed into the back rollers.

5. **Botany Yarn Spinning.**—In this case the fibre is carded, combed (usually on the Noble comb), and drawn and spun

similarly to the lustre, save that the spinning frame is of different build, a cap frame being employed which twists the slivers fed to it at double the rate of the flyer spinning frame. The whole of the machines in this set are designed to deal with a finer, shorter fibre as compared with the machines in the previous set.

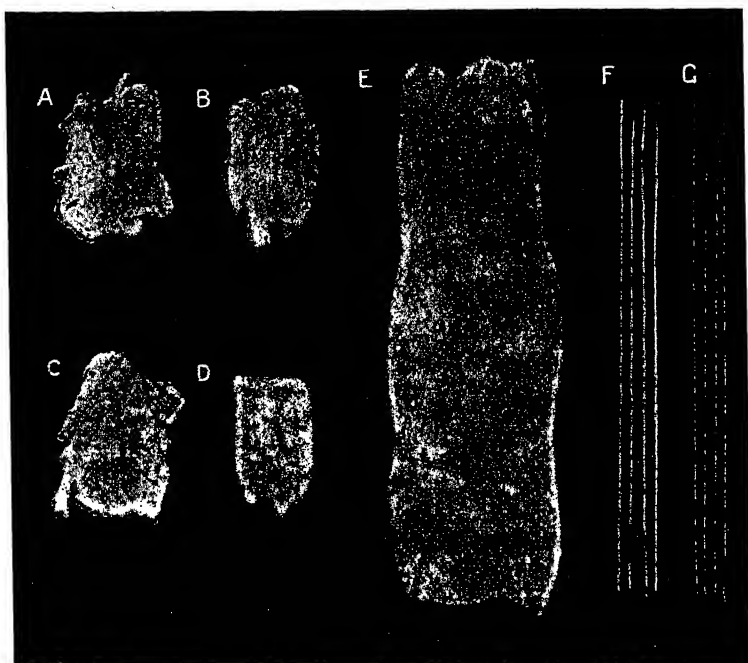


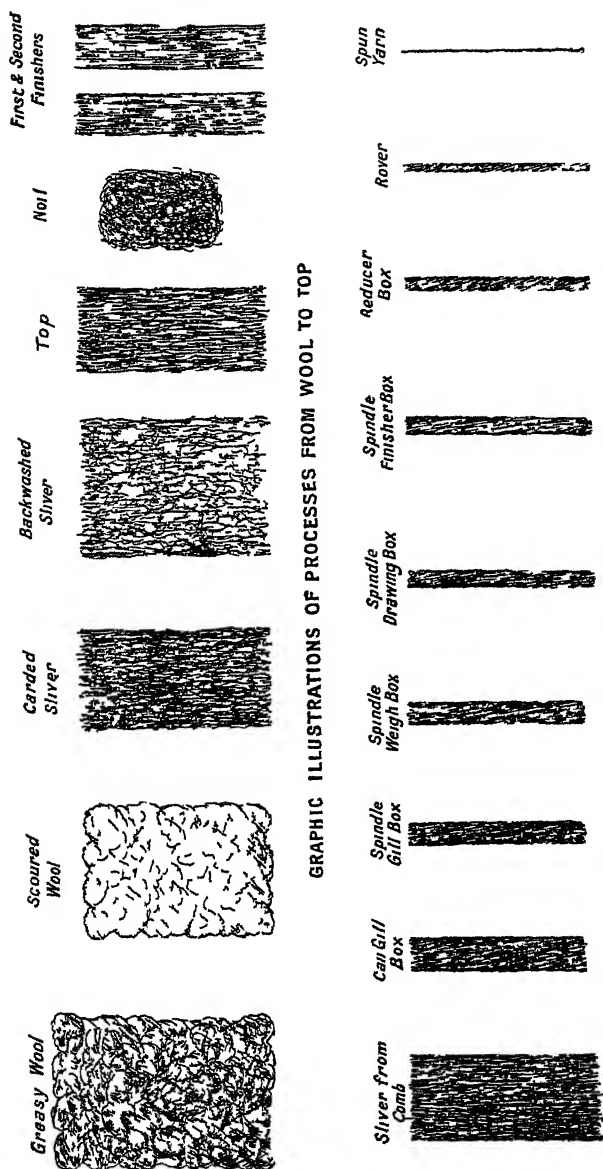
FIG. 8.—Woollen Processes.¹

A, Wool to be blended with Mungo B; C, Blend of material from Fearnought; D, Blend from ribbler; E, Blend in rope form from intermediate card; F, Condensed slivers; G, Mule-spun read.

There are various styles of yarn coming between the three types dealt with, but the principles involved are only re-combinations of these.

6. Warp and Weft and Preparation for the Loom.—Some of the yarns leaving the spinner's hands are hard twist; others are soft twist. The former are made into warps to be placed in the loom and actuated by the heald shafts. The latter are placed in the shuttle and thrown across the warp as controlled in the loom.

¹ From *Textiles*, published by Messrs. Constable & Co.



GRAPHIC ILLUSTRATIONS OF PROCESSES FROM WOOL TO TOP

GRAPHIC ILLUSTRATIONS OF PROCESSES FROM TOP TO YARN

FIG 9.—Worsted Processes, from Wool to Yarn¹¹ From *Textiles*, published by Messrs Constable & Co

7. Weaving.—The loom is a machine designed to effect the interlacing of warp and weft to produce such fabrics as are illustrated in the photo-micrographs of cloths given in Figs. 10 and 11. Briefly, it consists of an apparatus to form the shed or opening of the warp threads for the shuttle to pass through, a mechanism to propel the shuttle through this opening, an arrangement to beat up the weft thread close to its neighbour, a mechanism to let off warp as the weaving of the cloth continues, and a mechanism to wind up the cloth woven on to the cloth roller. Of course there are light and heavy, simple and complex looms, but the fundamental principles are the same.

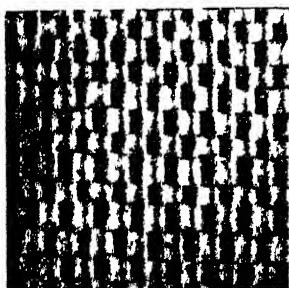


FIG 10.

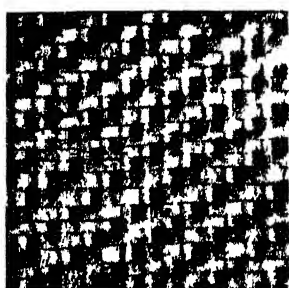


FIG 11

8. Dyeing and Finishing.—A silk fabric as it leaves the loom as a rule cannot be improved by any finishing processes; but a typical woollen fabric may leave the loom in a very rough, uncouth condition and be converted into a soft, full, warm cloth by means of the after processes. The shrinking and felting properties of wool are characteristic and differentiate it from all other fibres, and the manufacturer naturally endeavours to use these characteristics to the full.

The first finishing operation is usually washing or scouring so as to free the fabric from impurities and also to free the fibres so that they are ready for the next process—the felting or milling operation. Milling may consist either in hammering the fabric or in squeezing it up in length and breadth. The fabric is then straightened out by what is termed “tenterring” and then “raised,” i.e., the surface of the cloth is subjected to the action of natural teasles or to wire roller-brushes, and all stray, loose fibres raised up from the surface of the cloth. The next operation is “cropping,” the cropping machine being similar to a lawn mower, but in this case instead of taking the mower to the lawn, the lawn (the piece) is taken to the mower. Then

follow certain steaming and further tentering or stretching out operations, and finally "pressing," the fabric then being ready for the market.

This represents the finishing of a typical woollen fabric, but there are many variations and some special processes. Sometimes, for instance, the piece is wound on to a roller in hot water and finally on to a steaming roller and steam is blown through the fabric; in fact very often it is a truism to say that the fabric is "made" in the finishing. The writer's grandfather, for example, secured awards at several of the exhibitions from 1851 onwards for his fine broadcloths, but these goods often took six weeks to finish.

The dyeing of fabrics previous to the finishing operations is a process of much importance. Until quite recently the natural dyes—logwood, madder, fustic, cochineal, &c., and natural indigo, were the dyes almost invariably employed on the best wool cloths. The introduction of the aniline, alizarine, and other artificial dyes has led to a vast extension of the dyer's "gamut"; but unfortunately quality, at least in some cases, has deteriorated. The greatest discovery in recent years has been that of artificial indigo. As it is practically as fast as the natural product there is not the slightest objection to its use; in fact, so like the natural product is it that the chemist has no satisfactory means of differentiating between the two. Unfortunately all sorts of cheap dyes are put into goods of the Army and Navy type, with just a "topping" or "bottoming" of indigo, the goods then being sold as "indigo-dyed." The "Textile Institute" is at present concerning itself with this question on the initiative of the Yorkshire Committee, and it is probable that in the near future a definition of "indigo-dyed goods" will be agreed upon by those interested.

This brief description of the principles involved, it is hoped will enable the wool grower to realise the forethought and skill which the manufacturer must put into his work, and the importance of having a good foundation to work on in the shape of well grown and well "got-up" wool. The manufacturer should be able to pay more for such wools, and, if at first the progressive farmer does not feel that he gets the recognition he merits, he should remember that it is almost certain that it is but a question of time.

9. Typical Wool Cloths.—Possibly to the ordinary individual the two best known yarns or cloths are worsted and woollen. Our grandmothers always thought of "worsted" as a rough sort of yarn which would naturally make a rough sort of cloth if it were employed with this end in view; but generally it was knitted into stocking, &c. This idea was but

natural, for until the fine wools were combed and actually spun for the making of really heavy cloths it was the rougher sorts of wool only that were spun to thick counts of yarn on the worsted principle. With the perfecting of combing machinery about the middle of the nineteenth century this limitation was removed, and to-day as fine and soft yarns are spun on the worsted principle (with fibres parallel) as on the woollen principle (with fibres mixed up).

When using the term "woollen" the fine silky handling broad-cloth, made of the finest Saxony or Silesian wool, was no doubt originally thought of. Thus, so closely do some of us associate the woollen texture with fine wool yarns and cloths that we frequently speak of the "woollen" trade of Bradford, oblivious of the fact that while Bradford principally deals in fine wool fabrics and yarns, it produces hardly a piece of woollen fabric, while Leeds, still producing chiefly woollen fabrics, uses comparatively little fine wool.

It is undoubtedly best to speak of wool fabrics as wool fabrics and not as either woollen or worsted; but if we wish to differentiate between woollen and worsted cloths then we should use the term woollen or worsted according to the nature of the yarn of which the cloth in question is constructed.

Having dealt with the broad question of woollen and worsted, attention may now be directed to details concerning the type of cloths and yarns generally in use:

Bradford concerns itself roughly with four types of yarns spun from four distinct wools, viz. :—

Botany Yarns, spun from pure Merino wools (60's to 90's quality).

Crossbred Yarns, spun from Merino and English wools (44's to 58's quality).

Demi-Lustre Yarns, spun from medium length English wools (28's to 44's quality).

Lustre Yarns, spun from long English wools (28's to 44's quality).

The following list gives an idea of the fabrics into which these yarns are woven :—

Botany Yarns are woven into the finest dress goods, such as Cashmeres, Merinos, fine twills, &c.; also into worsted coatings and trouserings for men's wear. These yarns are also employed in the hosiery trade; also with cotton warps for linings, such as Italians and twills.

Crossbred Yarns are woven into medium dress goods such as serges, twills, &c.; also into the rougher coatings and trouserings for men's wear. Some special qualities of these yarns are employed for hosiery and the heavier flannels.

Demi-Lustre Yarns are woven into the lower qualities of what are termed lustre goods—goods consisting of a cotton warp with a wool weft. A fair percentage are also woven into clean, bare twill fabrics for ladies' wear.

Lustre Yarns are woven into the typical lustre cloth in imitation of the true mohair and alpaca plain fabric variously termed brilliantine, Orleans, lustre, &c., &c. The warp of these fabrics is of necessity cotton, but the bulk of the texture is pure wool of the highest lustre and beauty. Bradford stands unrivalled in the whole world for the manufacture of these goods.

The heavy woollen districts of Yorkshire now consume large quantities of mungo and shoddy and comparatively little wool.¹ Some few firms, however, endeavour to rival the super-fine army and box cloths of the west of England, and these firms buy the very finest clothing wools displayed at the London wool sales—top price wools in fact.

Various combinations of worsted and woollen yarns are made. Thus, a fine worsted mule-spun yarn is woven with a fine woollen weft to produce the famous Amazon cloth which Bradford has only learnt to make as perfectly as the French within the last six years. For the lower army and navy cloths worsted spun warp is often woven with woollen spun weft, making an excellent combination. There is also a large trade done in carpet yarns, these being most largely made from Herdwick and black-face wools. The various combinations of materials employed in the low woollen trade are worthy of more than passing comment, and must be considered at greater length.

Wool Substitutes and Trade Definitions—Attention has already been directed to the misuse of the term “indigo-dyed.” Perhaps, an even greater anomaly exists in the use of the term “woollen fabric.” Here it should be noted that a worsted fabric (lustre or botany) must be made of pure wool and nothing else. On the woollen principles of spinning, however, any short fibred stuff may be employed with the result that there has been such a marked deterioration in the true quality of woollen cloths that it is a most difficult matter to purchase a really well spun and woven woollen fabric.

Tailor's clippings and old clothing are torn up into a fibrous mass termed mungo, shoddy, extract, &c., according to the source from which it is derived or according to the fabrics from which it has been made. Now mungo and shoddy, although in a sense wool, have lost most of their

¹ NOTE—There is a most marked tendency to use more pure wool in these districts to-day.

original length and a great deal of their original elasticity and nature. They consequently make weak, dead cloths in comparison with the real article. If cotton be blended with these materials, however, a useful mixture or blend is produced which may be worked up into very useful cheap cloths. So proficient have the Batley, Dewsbury, and Colne Valley spinners and manufactures become that these cloths in appearance frequently rival the true wool tweed. That there is a use, and a very good and right use, for these mungo and shoddy cloths cannot be gainsaid, but that when the purchaser wishes to buy an all wool cloth these should be palmed off upon him calls for the most severe condemnation. Unfortunately the law has decided that the term woollen yarn means yarn spun on the woollen principle and does not specially refer to the fibre of which the yarn is composed, so that mungo, shoddy, cotton, &c., may be used within the legal definition. There is not quite the same objection to employing the waste from the worsted trade such as noil, roller waste, &c., but it does seem as though a line should be drawn somewhere, as undoubtedly the purchasing public is being taken in every day by spurious woollen goods really sold as wool goods while they have not a particle of fleece wool in them.

A Comparison of English and Australian Methods.—Sheep farming in this country is usually on a much smaller scale than that prevailing on the Australian Continent, in South America, and even in South Africa, and as a result it is more than probable that the older but smaller industry has at least something to learn from the younger but larger industry. In the matter of shearing, "get-up," and packing it is probable that the English farmer has much to learn from his fellow countryman across the seas. On the other hand as "paddocking" develops and endeavours are made to bring all tracts of land into use whatever the difficulties may be, the Australian has much to learn from the old country. Romney Marsh sheep are being introduced with advantage into certain low-lying coastal districts, heavy Lincolns and Leicesters are being bred on the richer pasture land, and so forth. One cannot take up such a publication as *Dalgety's Review* without being impressed with the fact that out in Australia they realise that they must work up to modern conditions and that nothing but the best will do for them. It is this spirit of using everything which modern scientific discovery has revealed that so energises the Australian. Is the English farmer going to be equally determined to make science his handmaiden?

It is sometimes argued, and facts too frequently support the argument, that the scientific wool-grower does not meet

with that recognition at the hands of the wool-buyer which is his due. This is only another way of saying that the wool-buyer frequently lacks appreciation of scientific methods ; and it is true that much has yet to be learnt in this direction. But the institution of such a school of textile technology as that just nearing completion at Bradford, the Textile Department of the University of Leeds, and certain other schools up and down the country, must do much in the near future to combat this unprogressive spirit. If, also, those academic agriculturists who are so successfully striving to introduce "scientific methods" into farming in all its phases, can formulate some means whereby they may be kept in touch with the work conducted and the results achieved in the institutions to which reference has just been made, then they may very usefully act as the redistributors of knowledge, to the lasting advantage of those most interested.

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THE HORSE-BREEDING INDUSTRY IN YORKSHIRE.

AT what period of history Yorkshire first became famed for its horses is difficult to determine with any degree of accuracy, for that would mean delving back into the obscurity of at least several centuries ago. Certain it is, however, that its fame as our premier horse-breeding county was firmly established on a solid foundation and extended even into foreign parts already over two hundred years ago, and ever since it has easily maintained its foremost position as a noted horse-raising centre. It is true, unfortunately, that horse-breeding operations in Yorkshire, in common with those in practically every other county, have suffered some decline of recent years, due to the advent of the motor car and the introduction of other forms of mechanical motive power on our streets. There is, according to the official returns of the Board of Agriculture, a reduction of nearly 17 per cent. in the number of foals annually bred in the three Ridings as compared with what was the case twelve years ago. The industry has suffered most in the East Riding, where the decline since 1900 amounts roughly to 25 per cent. Nevertheless, Yorkshire continues to make a good show as a horse-producing district, breeding as it does upwards of 12,000 foals in a season, of which number each Riding claims approximately one-third. The total

certainly represents a large slice out of the 87,000 odd foals which are annually bred in England (excluding Wales). Contrary to the widely held opinion that East and North Yorkshire breed the most horses, it is, as a matter of fact, the West Riding which has of recent years held pride of place in this respect, more foals being raised in this part than in either of the other two Ridings.

The horses bred in the county embrace a wider range of types than is found in any other part of the country, the varied character of the horse stock constituting a very notable feature of the Yorkshire horse-breeding industry. Every recognised English breed is represented, including Hunters, Thoroughbreds, Hackneys, Cleveland Bays, Yorkshire Coach Horses, Shires, and Polo Ponies. Then the half-bred types of harness horses, trappers, and nags constitute an important element, especially so the harness horse, while another distinctive type is met with in the present-day descendants of the old-time Yorkshire farm-horse breed, which is now more or less (mostly more so) blended with Shire blood, or in some instances with that of the Clydesdale.

Taking these various breeds in detail, the first place may fittingly be accorded to the *Hunter*.

The breeding of hunters in this county has always been a great feature of its husbandry, and excellent stock of this class has been, and continues to be, produced here. The names of Yorkshire breeders figure very prominently in the annals of hunter-breeding, from the earliest inception of the industry onwards, when the evolution of the thoroughbred first led to the development of the half-bred hunter, right up to the present time. A leading breeder of the old school during the last century was Sir George Cholmley, whose studs at Boynton, near Bridlington, and at Howsham, near Malton, held a conspicuous position from the forties until the seventies. He bred both thoroughbreds and hunters. Most of the latter were pretty nearly thoroughbred, but up to plenty of weight for all their blood and quality. His most noted stallions were *King Caradoc*, *Codrington*, who was ultimately sold to go to Austria, *Record*, *Volturno*, *Hubert*, *Orpheus*, and a son of the last-named, *Angelus*, described as a big-boned horse. *Angelus* figured prominently in the show-ring in the seventies, and was one of the crack hunter sires in Yorkshire at that period. Two other leading sires contemporaneous with him, which also won many prizes at the Yorkshire shows, were *Citadel* and *Laughingstock* by *Stockwell*. The former was a stallion of great size, but apparently not very successful in transmitting that feature to his stock. Sir George's famous stud was finally dispersed by public sale in 1875, and with it disappeared one

of the landmarks in the modern history of Yorkshire horse-breeding. Among the hunter sires of note used about a generation earlier than the period just alluded to were *Old President*, *MacOrville*, *Theon*, *Perion*, who at one time stood in the Cleveland district, and at a later period *Young* or *Bay President*, also called *President Junior*, a son of *Old President*. In the seventies, the stallion *Highthorne* by *Camerino*, out of a Sir Tatton Sykes mare, was another noted sire of hunters, and got many prize winners. He was bred by Mr. Lumley Hodgson, of Highthorne, Northallerton way, an acknowledged authority on the breeding of hunters. An interesting letter written by him about Yorkshire horse-breeding is incorporated in a paper on half-bred horses, contributed by Lord Cathcart to Vol. 19 of the R.A.S.E. Journal, though it must be confessed he wrote in a pessimistic vein about the industry at that stage (1882), deploring its decline in strong words.

Undoubtedly hunter-breeding in Yorkshire fell rather under a cloud towards the end of the seventies and in the early eighties, what with some of the old breeders falling out owing to agricultural depression, and many farmers turning their attention from the raising of light horse stock to the production of Shire-bred cart-horses, which about then came much into vogue as being a possibly more lucrative, and certainly more dependable business. Hackney-breeding, too, commenced to come into the ascendant, that also tending not inappreciably to interfere with the hunter industry. Added to all this, a scarcity of suitable hunter brood mares was complained of—a complaint which then, and even earlier, was quite as prominent as it is nowadays. This shortage was largely ascribed to the constant drain upon the stock of half-bred mares by foreign buyers. However, even when the industry was at a low ebb, some good support for hunter-breeding continued to be forthcoming in several quarters; Lord Middleton, for one, did yeoman service in keeping up the old breed of hunters, and came prominently to the fore as a breeder about this time. He added considerably to the stud of hunting brood mares, which had already previously been kept for upwards of twenty years by his father, Henry, eighth Lord Middleton, and continued the latter's policy of keeping thoroughbred hunter sires for use in the district, so doing much to foster the breeding of half-bred horses. Another very noted stud in existence at this period was that of the late Mr. Henry Constable, at Wassand, near Hull. It consisted of thoroughbred mares, and he bred a few race-horses, but most of the colts produced here were hunters of the 13 or 14 stone type. He had, among others, such sires as *Theobald*, *The Baron*, *Foreshore*, *Lowlander*, and

Southampton, to whom many good hunters of the present-day strain back, a son of the last, in *Cyclops*, a very good horse, who won four Queen's premiums, and finally *Ottertton*, also a premium winner, who left some excellent stock in Holderness, and was in 1910 bought by Mr. Wickham Boynton, and eventually sold to go to Ireland. The Wassand stud continued to flourish till Mr. Constable's death three years ago and was then dispersed, when about forty brood mares, in addition to young stock, were sold. It was also at the beginning of the eighties that Mr. Frederick Reynard, of Sunderlandwick, Driffild, a staunch supporter of the hunter to-day, started his stud, founded on old lines of blood, and he has ever since maintained the best traditions of old-time Yorkshire hunter-breeding.

Lord Middleton's famous stud at Birdsall, the largest in the county and perhaps in England at the present time, has, during the last thirty years exerted a far-reaching influence upon the local horse-breeding industry, which admittedly owes much to his efforts to further its interests. The number of stallions travelled, including thoroughbred hunter sires, Shires, and pony stallions, averages twelve to fifteen in a season, which gives a pretty good idea of the prominent part played by the stud. The leading thoroughbred stallions used here in the eighth Lord Middleton's time, from about 1856 to about 1877, were *Bonnie Morn* by *Chanticleer*, *Lord Albemarle*, *Cheddington* by *Lanercost*, *Fingal*, and *Morocco* by *King Tom*, while another good sire was the half-bred *Elcot*. *Morocco*, especially, made a great mark, and may justly be styled the father of this stud. He continued standing at Birdsall in the present Lord Middleton's time, being the earliest of the long list of good blood sires in his stud. Most of these sires were premium winners, and among the more notable of those kept at the beginning of the present Lord Middleton's ownership—besides *Morocco*, already mentioned—were *King Harold* by *Thunderbolt*, *Peppermint* by *Camballo*, and *Escamillo* by *Pero Gomez*. These were followed by *Gordon*, *Spectre Lord*, *Sherbrooke*, who was used largely in the Holderness country, *Scot Guard*, *Hindley* by *Minting*, *Tenton*, *The Coroner*, *Scotch Sign* by *Ayrshire*, *Red Eagle*, *Wales*, and others. Several of these, with *Gordon* and the two last named in particular, have stood out very prominently, and must be assigned a foremost place in chronicling the latest phase of the history of horse-breeding in Yorkshire. Probably—after *Morocco*—the most notable sire was *Gordon* by *Hermit* out of *Sister to Adelaide*, foaled in 1881, a dark bay horse, of fine carriage and outlook. He stood eleven years at Birdsall, but was never exhibited. Lord Middleton gave 1,000*l.* for him—

then a high price for a hunter sire—and never regretted it. He sired the soundest of stock, and got good-tempered and high-couraged produce. There were, at one time, fifty-two of his stock on the place, and as many as twenty hunters sired by him in the hunt stables at the same moment. *Red Eagle* by *Thurio* was twelve years old when he came to the Birdsall stud, and completed eight seasons here. He got some of the best of hunters, and his produce have been very successful in the show-ring. The leading sire now is the well-known *Wales*, a great favourite with his owner. He is Irish bred by *Belgrave*, and has won under both rules in Ireland and this country. Standing 16·1 hands, of great power, short-legged, and with plenty of bone and substance and grand quarters, this chestnut represents a typical hunter sire. He has left his mark in the district in unmistakable fashion, and a good many of his stock have taken high show-ring honours. His get have won the produce prize for groups of three by one sire at the Hunters' Improvement Society's Show on four occasions, while he himself gained a King's premium four years running. The other thoroughbred stallions in use at the stud at present are *Proudridge* by *Pride*, *One Away* by *Rapallo*, and *Stickup* by *Collar*. *Wales* stands at home at three guineas to tenant farmers' half-bred mares; the others are travelled at a fee of two guineas, the rounds extending up to Kirby Moorside and Pickering in the North Riding, Sherburn way in the West Riding, and as far as Foxholes and Ganton in East Yorkshire.

The hunter brood mares at Birdsall, numbering some twenty-five, comprise, among others, the descendants of nine foundation mares found in the stud in the eighth Lord Middleton's time. These were *Shepherdess*, *Magic*, *Louisa*, *Violet*, *Dinah*, *Maggie*, *Queen Bee*, *Fannie*, and *Lavinia*, by which names the different strains descended from them still continue to be known. The *Shepherdess* family is reckoned one of the best lines of blood, and is now represented by the mare *Scornful* by *Gordon*, and her two daughters, *Scruple* and *Scalpay*. The original *Shepherdess*, foaled 1853, was by *Maroon*, and came of old Yorkshire breed, her dam's sire having been the half-bred *Revolution*, a noted hunter sire in the county in the thirties of last century. *Magic* by *MacOrville*, and bought from Henry Darley, of Aldby Park, was descended from an old-time Chapman mare. It is on a daughter of hers, *Magic the Second*, that the eighth Lord Middleton is seen mounted in the hunt presentation picture at Birdsall. The *Magics* all turn out wonderfully good jumpers. *Louisa* was a thoroughbred mare by *Pompey* out of *Jill* by *Touchstone*. A descendant of hers, the filly

Modwena, was reserve for the Championship at the Islington Show in 1908. The latter has an all thoroughbred pedigree, her dam being *Madam Modjeska* by *Gordon*. *Madam Modjeska's* dam was by *Peppermint* out of *Monica* by *Morocco*; and the great-great-granddam of *Modwena* was the original *Louisa*. *Violet*, a bay mare, bought by the eighth Lord Middleton after winning a race at Nottingham about 1866, was by *Loutherberg*, dam by Sir Richard Sutton's *The Friar*, who, although in the stud-book, was really a half-bred horse. *Dinah* was a Yorkshire hunter mare of Holderness breed, her dam's sire having been *Lanercost*, who in the early part of last century got some noted hunting stock out of half-bred mares in Yorkshire. *Magpie*, foaled 1838, came of a famous racing pony strain, and founded a very valuable breed, her descendants making particularly hard and useful Wold hunters. *Queen Bee* was by *Newminster* out of *Birdhill's* dam, and *Fannie*, a half-bred mare, came of *Touchstone* descent. *Lavinia* was one of Sir George Cholmley's mares, by *Theobald* out of a thoroughbred dam, and was bought at the famous dispersal sale of his stud. Among the foundation mares added by the present Lord Middleton were *Moorhen* (by *Young Walkington*), that carried the huntsman for eight seasons, and then proved a great success at the stud; *Miss Sykes*, a half-bred mare by *Morocco*, whose grandson, *Syntax* by *Wales*, took first prize as a two-year-old at the "Royal" at Norwich last year; *Mermaid* and *Firefly*, that have both produced high-priced hunters, the thoroughbreds *Fair Geraldine* by *Desmond* and *Clare Girl* by *Novelist*, and others of later dates. Bay and brown are the prevailing colours among the brood mares and young stock, with a sprinkling of chestnuts. The horses in the hunt stables, which usually number between thirty and thirty-five in the season, are all of them home-bred. The young hunters are broken by the roughriders at four, and come into the hunt stables when five-year-olds.

Mr. Frederick Reynard's stud at Sunderlandwick, about two miles from Driffeld, comprises some eight brood mares, all of a good hunting type, combining quality with plenty of bone and substance, and so just the kind to breed hunters up to 15 or 16 stone. Their bone below the knee, their large and well-shaped hocks, and their good well-laid shoulders stand out as specially notable features. The sires used here have almost invariably been Queen's and King's premium winners that have stood in the district, including *Cyclops* and *Ottertton* from the Wassand stud, *Gordon*, *Hindley*, *Red Eagle*, and *Wales* from Birdsall, and *Not Out*, *Denis Richard*, and *Berrill* from Mr. Wickham-Boynton's stud at Burton Agnes. The last, located not far from Driffeld, occupies a leading position

in East Yorkshire, and there Mr. Wickham-Boynton has for the last ten years kept a number of thoroughbred stallions, most of them King's premium horses. He started his stud in 1902, buying, in partnership with Mr. Henry Cholmondeley, of Sledmere, *Not Out* by *Isinglass*, and bred by Sir Tatton Sykes. This horse won a premium in the following year, and was at the end of the season sold to go to Hungary, having left some very good hunters behind him. Then he had *Pax*, another premium winner, who after two seasons at the stud was bought by the French. Subsequently the stud followed up its successes at the Islington Show with the Irish-bred *Roe O'Neill*, *Foundling*, *Denis Richard*, *Longcroft*, winner of the Lincolnshire, and finally last year with *Berrill* and *Athos*, all these sires winning King's premiums. The first two, after a brief stud career here, were sold to Sweden, and *Longcroft* to Ireland. *Denis Richard* by *Laveno*, who won premiums in 1908 and 1909, has proved himself a very successful sire, and his stock have won a good many prizes in the county. He was sold at the last December sales at Newmarket for 600*l.* to Sir Merrik R. Burrell, who owns a noted stud of hunters in Sussex. Besides those named, several other thoroughbred stallions of note have stood at the Burton Agnes stud for short periods, notably *Black Auster* by *Persimmon*, *Toledo*, and *Bill of the Play*, a very high-class horse by *Bill of Portland* out of *Opera Dance*, practically all eventually being sold to go to Continental countries. The last mentioned, for instance, was bought for 1,550 guineas by Count Lehndorff for the German Government stud at Graditz. The stallions standing at this stud at the present, and which are jointly owned by Mr. Wickham-Boynton and Mr. Henry Cholmondeley, are *Berrill* by *Rouge Dragon*, *Viceroy*, a highly-bred Gallinule horse, and *Athos* by *The Rush*. The first has come greatly into fashion as a sire for half-bred mares since he won the newly-instituted King's Champion Cup for the best premium stallion at the Islington Show last year. *Berrill*, who won the Cambridgeshire in 1900 and many other races, and has sired winners under both rules, is a very attractive stallion, well-balanced and truly shaped, standing 16 hands, a sound dark bay in colour, and nicely actioned. He has got some good foals from hunter mares in the district. An outstanding point about the grey-coloured *Athos* is his good and springy action. Mr. Wickham-Boynton has no difficulty in filling the lists of all the horses at the stud, the thoroughbred sires on an average covering some eighty mares during the season. Some good hunters have been bred at the Burton Agnes stud, among them prize-winners, but only a few hunter brood mares are kept here.

The premium stallions have undoubtedly had a very beneficial influence in fostering the breeding of half-bred horses, and particularly of hunters, in the country since the Queen's premiums were instituted in 1887, though probably more as regards quality than numbers. The East and West Ridings, which form District VI under the premium scheme, are allotted four stallions, and these last year were *Berrill*, *Athos*, *Brummagem*, and *Birk Gill*. *Brummagem*, a good horse that has sired some useful stock, stands at the Riding Fields stud, near Beverley, belonging to Messrs. Edward and Philip Hodgson, who are among the principal hunter breeders in East Yorkshire. *Birk Gill*, by *Marcion* and owned by Mr. Eustace Barlow of Sigsworth, Pateley Bridge, travelled Rigsley, Ripon, Boroughbridge and Wetherby way, in which districts of the West Riding the breeding of light horses and hunters is carried on to a very considerable extent. The North Riding is grouped together with the counties of Durham and Northumberland in the allocation of the King's premiums, the whole forming District IV, which is allowed three premium sires. In the past year the premiums were gained by *Skiograph*, *Drummer Kelly*, and *Red Hall II*, all of them Yorkshire-owned horses and well known. *Skiograph*, recently sold at the December sales at Newmarket, belonged to Major Fife, who is a prominent breeder of thoroughbred stock and has an important stud at Langton Hall near Northallerton. The country round this place and towards Thirsk, Bedale, and northwards towards Catterick has always been, as is well known, a great centre of light horse breeding and still continues so. *Red Hall II*, a very big chestnut horse, is owned by Messrs. Ward of Pinchinthorpe, Great Ayton, in the Cleveland district, and *Drummer Kelly* also stood in this part at Guisborough, a famous Cleveland Bay centre at one time, and he travelled towards Whitby and Egton, a district where they breed useful half-bred horses of big size, some of them of a good hunter type, from a Cleveland Bay foundation. Some good premium stallions have at various times been owned by Mr. William Jordison, of Carlton Lodge, Thirsk, who generally keeps a thoroughbred sire in the district. Among those so kept have been *Rosy Monk* by *Rosicrucian*, *Trundle Hill*, *Burnock Water* by *Waterford*, who won four premiums, and *Marzio* by *Marcion*. *Burnock Water* got some excellent hunter stock in North Yorkshire and sired several good prize winners. He also had other useful horses in *Street Arab*, *Ferraby*, *Seaport* by *Southampton*, *Pedant*, and *Master Lovut*. The last now stands in Norfolk. His last stallion was *Proudridge*, who has joined the Birdall stud. Mr. Jordison was formerly a successful breeder of hunters, but gave up breeding them some years ago. The

last hunter he bred was *Monarch*, a fine grey gelding which won the champion prize at the H. I. Society's show last year for his then owner, Mr. Stephen Furness, M.P.

Although hunter-breeding on the part of farmers in Yorkshire may not be what it was thirty-five years or more ago, a considerable number continue to be bred by them, and there seems to be no real cause to take such a pessimistic view of the situation as is held and expressed by some. One thing is pretty certain, and that is, that the industry probably enjoys a greater degree of prosperity here than in any other part of the country. Nowhere else at any rate is a larger proportion of hunters bred in relation to the total number of foals raised, including both light and heavy breeds, than in Yorkshire. Despite the increasing hold the Shire breed has gained in the county, which has brought with it the conversion of the originally almost or wholly light-legged stock of farm-horses into a much heavier hairy-heeled cart-horse type, there still remain in the hands of farmers a good many mares, more or less suitable, that will throw a foal of hunter type to a thoroughbred sire—such as, for instance, mares straining back to the old Cleveland blood, or mares with a coach horse cross in them, which sorts are in particular to be met with in the North Riding and along the coast of the East Riding, and also in other parts. These are mares specially suitable to produce big horses of the weight-carrying hunter stamp. Another leading type from which the farmers often breed horses of likely hunter shape, if a blood sire is used, are the nag mares they drive in their carts and use for odd jobs on the farm, which are of nondescript breed in most cases and of a variety of cross-bred types, some big, some small, some of roadster descent, some with a strong strain of cart-blood in them, and so on. The mares used for hunter-breeding by farmers are, no doubt, in the majority of cases, essentially common, but a corrective for this is, of course, supplied by the thoroughbred sire, provided he is sufficiently impressive. Sometimes a hunter is even bred by crossing a cart-mare of a lightish stamp, such as is found, for instance, in the Wold country, with a blood horse. That cross, when successful, however, is more or less of a fluke, and few farmers try this plan in these days when cart-horse breeding is so much in the ascendant. The quantity of well-bred, typical hunter brood-mares in the country, owned by hunting-men who breed in a small way, must be very considerable, though it would be manifestly impossible to make any reliable computation of their numbers.

Yorkshire is unquestionably better supplied with thoroughbred stallions [standing or travelling in the district than most other counties, and this must necessarily favour the production of

hunter-stock, though it may be admitted that some of the blood sires that are travelled are not as good as they might be and fall short of the standard usually reached by the premium horses. The thoroughbred is, practically speaking, the only kind of sire which plays any part in the hunter-breeding industry. The "hunter-bred" or half-bred hunter stallion appears to be scarcely existent in the county nowadays, any more than he is elsewhere in the country. In times gone by, however, the latter was a good deal in evidence, and originally had his prototype in the old-time Yorkshire cocktail stallions which were freely used as sires here until the early years of last century, and in frequent cases at a later period. In some instances a colt sired by a coaching stallion may turn out a useful hunting stallion if the dam is of a suitable type, but that is somewhat exceptional.

In former times a valuable influence was exercised upon the improvement of the breed of hunters by the hunter races at numerous local meetings, for the supporters of these events, mostly hunting men, naturally tried to run horses as nearly thoroughbred as possible, without their actually being in the stud-book.

The favourable conditions of soil and climate which render the county so pre-eminently adapted as a breeding ground for hunters of stout breed and with strong bone, as well as for other kinds of half-bred horses, stand it in equally good stead as regards the breeding of *Thoroughbreds* for racing purposes which have always been bred in this country with conspicuous success. Yorkshire is very closely associated with the early history of this breed, for *The Darley Arabian*, one of its famous foundation sires, stood in Yorkshire. This horse was imported from the East and owned by a Mr. Darley, of Buttiscramb, near York, some time between 1700 and 1715. He sired, among other good racehorses, the two historic horses *Devonshire or Flying Childers*, bred near Doncaster by Mr. Childers, and subsequently owned by the Duke of Devonshire, and *Bartlett's Childers*. The former made a great mark as a racer and was reputed the fastest horse in training in his day, while the latter, although never trained and raced himself, became the sire of several racehorses of note, but is principally known to fame as the great-grandsire of *Eclipse*. Coming nearer to our own times there was the celebrated *Flying Dutchman*, by *Bay Middleton* out of *Barbette*, winner of the Derby in 1849, who was bred on Yorkshire soil by Mr. Vansittart, of Kirkleatham. A foremost place in the many historical associations existing between Yorkshire and the thoroughbred breed is held by the Sledmere stud, which became famous in the times of the predecessor of the

present Sir Tatton Sykes, of whose doings we read so much in the Druid's works. He had at one time, according to the Druid, some 120 brood mares in the paddocks, though the largest crop of foals recorded in a season was about 66 head. The Sleight-of-Hand mares were one of his best and favourite strains. On his death at the age of ninety, in 1863, the policy of the stud, which lies in the Wold country, underwent some change, but its old-time reputation has been more than maintained under the present baronet. Sledmere now ranks as one of the most notable and successful thoroughbred studs in the country, and there are no yearlings more eagerly sought after by buyers, nor of higher repute at the yearling sales, than the contingent from these paddocks.

Another very noted breeder of bloodstock in Yorkshire, Major Fife, has already been alluded to. There are some thirty-five brood mares of choice blood, at his stud at Langton Hall, which among its successes has the breeding of an Oaks winner to its credit. This was *Airs and Graces*, who won in 1898, and subsequently proved very successful at the stud in France. She was the dam of *Jardy*, who many still aver would have won the Derby in *Cicero's* year, and so repeated *Gladiateur's* triumph for the French, had he not been amiss when running in that race. Another filly foaled here that has made her mark as a brood mare was *Miss Hoyden*, the dam of *Lally*, while among others of note Major Fife has bred *St. Alwyn*, one of the leading sires in Australia. The sires standing at the Langton Hall stud at present are *St. Simonmimi*, by *St. Simon* out of *Mimi*, bred by Sir Tatton Sykes, and own brother to *St. Macdou*, and also *Bonarosa*, by *Bonavista* out of *Rose Madder*.

Very prominently associated with Yorkshire are the *Hackneys* which have here found a highly congenial breeding ground, more especially so in the East Riding, but they are also bred in the North and West Ridings. The Yorkshire Hackney strains were originally built up with Norfolk trotter blood, on a foundation provided by the native breed of nags and roadsters. This trotter blood began to be introduced into East Yorkshire towards the end of the eighteenth century, and was used on an increasing scale from the beginning of last century onwards, the origin of the Yorkshire Hackneys thus dating back for upwards of a hundred years. Prominent in their early history was Robert Ramsdale, of Market Weighton, who was the leading breeder of the old-time trotters in the first half of the last century. He brought several good trotter (or Hackney) stallions from Norfolk and Lincolnshire, and travelled them in the district. In the Druid's "Saddle and Sirluin" there is an allusion to old Bob Ramsdale, then eighty years old,

and to his two trotter sires *Pretender* and *Performer*, which has become classical as an item of old Hackney lore. The stallions referred to are Wroot's *Pretender*, a black, bought by Ramsdale from a Lincolnshire breeder in 1807, and his son, Ramsdale's *Performer*, foaled in 1810, and dark brown in colour. Another excellent horse he had from Norfolk about 1838 was *Roan or Norfolk Phenomenon* (Bond's) who sired some useful stock in East Yorkshire in the forties, and eventually was sold to go to Scotland. Bob Ramsdale's son, Philip, was also closely connected with the breed, and helped to establish it, owning a number of good sires. In this way the Market Weighton and Pocklington districts became an important stronghold of the Yorkshire Hackney, and so they have ever since remained, its principal breeding centre extending thence eastwards over the Wold country, Garton-on-the-Wolds and Driffeld way; southwards down to Hull, and including Holderness. Some of the most noted and fashionable blood-lines of the Hackney breed have originated in these parts.

The three leading sires which in modern times have played the chief part in the development of the Yorkshire Hackneys were the noted Triffit's *Fireaway*; the still more famous *Denmark*; and *Lord Derby II*. Practically all the best strains of the present day trace their ancestry back to these foundation stallions which will ever stand out conspicuously in the history of the breed. A prominent Hackney breeder of his day, Philip Triffit, of Holme, Pocklington, bred *Fireaway* in 1859. He was a very stout and sound horse, standing 15½ hands high, and sired a lot of good stock, usually distinguished for their stoutness. He lived to be over thirty years of age. While *Fireaway* was far and away the best sire he owned, Triffit, had also, besides some others, two useful stallions in the black *Sir Edwin Lundseer* and the dark brown *Lundseer*, both being sons of old *Fireaway*. *Denmark*, one of the best Hackney sires ever seen, perhaps the best in modern times, was bred in 1862 by William Rickell, of Warter, in the Pocklington district. His sire was *Sir Charles* (Beal's). He was subsequently owned by George Bourdass, of Hunmanby, who later on also became the owner of his celebrated son, *Danegelt*, foaled 1879, the latter having been bred by Francis Rickell, a brother of William, who also had a stud near Pocklington, and was a very successful breeder. Already earlier, in 1858, he had bred *St. Giles* (Rickell's), another foundation stallion of great note to whom some of the old Yorkshire strains go back. This old established stud, which formed one of the connecting links with the past, was finally dispersed in 1887. After having got good stock in his native county, *Danegelt* was subsequently sold by Mr. Bourdass for the big price of 5,000*l.* to Sir Walter

Gilbey, whose well-known Hackney stud at Elsenham Paddocks in Essex, has been largely built up upon his blood. Harking back to Denmark—he was essentially a quality horse, 15·2 hands in height, and chestnut of colour. He had more style about him than *Fireaway*, and generally imparted plenty of stylishness to his foals. Highly successful in the show-ring himself, he got many prominent prize winners in his generation, his stock at one time being practically invincible. The Denmark blood in consequence gained a predominating influence in Yorkshire. One of his more noted sons was *Connaught*, a horse of sterling merit, bred by Mr. R. Tennant, of Kirkburn Grange, Driffield, a leading breeder of Hackneys. *Connaught* in his turn got *Garton Duke of Connaught*, a renowned sire of more recent times in the county. The latter's breeder was Mr. Joseph Young, of Garton-on-the-Wolds, in the country around which place so many good Yorkshire Hackneys have been bred by various breeders of note, including Mr. John Atkinson, Mr. Richard Ford, and the Harrisons, who owned a very old-established strain, and whose stud at Garton was a prominent one until comparatively recently. Mr. Mansfield Harrison, himself a noted breeder, was the manager of Mr. Burdett-Coutts's great stud in its most palmy days.

Lord Derby II (417), the third principal foundation stallion alluded to previously was bred in 1871 by Mr. J. R. Burnham, at the Frodingham Hall Stud, Winestead, in Holderness. He was sired by Leake's *Lord Derby*, a stallion of considerable local reputation some forty years ago, and straining back to Philip Ramsdale's old breed of trotters. A hard, strong-constituted horse, of a sound dark brown colour, and with plenty of style, *Lord Derby II* showed himself a very impressive and prepotent sire, and got his stock with much quality as a rule. He left a great imprint on the breed, and his success as a sire soon established his as a leading line of blood. *Lord Derby* mares especially proved themselves very valuable for breeding purposes, and bred much winning stock. Apart from breeding a horse of such outstanding merit as *Lord Derby II*, Mr. Burnham was also otherwise a successful breeder, many good animals having been produced at his stud. Among the original brood-mares here was the noted old red-roan, *Lady Landseer*, by *Sir Edwin Landseer*, she being one of the early foundation mares in the stud-book.

One of the most prominent breeders of the old school who helped to make Hackney history in its more modern phases was Mr. Henry Moore, of Burn Butts, Cranswick, near Hull, whose stud began to come greatly to the fore towards the eighties. His father, William Moore, already bred trotters in the fifties, and possessed an old strain descended from Robert

Ramsdale's *Pretender* (Wroot's), through a mare called *Poll I*, which he got from an old-time breeder at Shipton in the Market Weighton district, Robert Smith by name. This mare was the granddam of the noted *Poll III*, Mr. Henry Moore's principal foundation mare which bred some of the leading Hackneys of their day, including Moore's *Confidence*, foaled in 1880, *Candidate*, *Caxton*, and *Empress*, the two former sired by *Denmark*, and the last two both by Triffit's *Fireaway*. *Confidence* sired some good stock, and won many prizes for Mr. Moore, eventually being sold for a big figure to the Italian government. *Candidate* was bought by Mr. Burdett-Coutts, and played a conspicuous rôle at the Brookfield stud, while Sir Gilbert Greenall purchased *Caxton* for his Hackney stud at Walton Hall, Warrington. *Empress* became a successful brood-mare at Burn Butts. Probably the best stallion Mr. Moore ever had was *Rufus*, foaled 1885, by *Vigorous*, dam *Lady Kitty*, whom he bought from the well-known Hackney breeders, Robert Peacock and Sons in Norfolk. He twice won the Championship with him at the London Hackney Show. Three thousand guineas was subsequently bid for this horse, but Mr. Moore refused the offer, only to lose him later on through some fatality when he was only six years old. He had at the time of this stallion's death over a hundred mares booked to him at a ten-guinea fee, so experienced a heavy loss in respect of stud fees alone. *Rufus* was a very fine stamp of Hackney, combining substance with quality, and quite in the front rank as a stallion at the time. This early loss was a distinct calamity for the breed. He sired some excellent stock in the course of his brief stud career, amongst the best of his get being the noted *Hedon Squire*, of whom more anon. Mr. Moore's stud continued to retain its leading position until quite recently. Like many another breeder, he found foreign buyers to be among his best customers, and sold a good many colts and stallions for export, principally to the agents of the Italian, French, Austrian, and other Continental Governments, while he was one of the first to sell a Hackney stallion to go to Australia.

Among other old breeders who were prominently associated with Hackney-breeding in Yorkshire from the sixties or seventies of last century onwards, may be mentioned Mr. J. P. Crompton, who had a stud at Thornholm, two other brothers of the Crompton family, and Mr. Thomas Reed, of Upton. The first named owned as one of his foundation mares the historic *Crompton's Bay Mare*, one of the original mares entered in the stud-book, by *St. Giles* (Rickell's). Of the various stallions he bred, probably the most notable were Postill's *St. Giles*, a son of Rickell's *St. Giles*, foaled in 1864, and who was

subsequently owned by Robert Postill, of Foston, near Driffield ; and *Dorrington*, by *Denmark*, foaled 1877, a horse on the big side for that period, as he stood 15·3 hands high. The stud was finally dispersed, some time after Mr. Crompton's death in the middle eighties.

A leading Hackney stud in the eighties and nineties was that of the late Lord Londesborough, which he established at his place near Market Weighton, largely upon a foundation of Denmark blood, by using *Danegelt*, *Candidate*, and other sires of that breeding. He was above all a believer in action, and did much to develop that feature in the breed. Among the many good horses he bred were the well-known *Polonius* and *Mathias*, two of the leading sires of the present era, both out of his famous mare *Ophelia*, a very brilliant mover. The breeder of this great mare, which ranks as one of the best females, either in the show-ring or at the stud, in modern Hackney history, was Mr. William Deighton, of North Duffield, Selby. She was either by *Denmark* or *Danegelt*, her dam being *Jenny Bother 'em*, and is still alive, but close on thirty years old. Another notable mare of Lord Londesborough's was *Meg Merrilies* (by *Wildfire*) which he bred himself. *Polonius* was got by *Wildfire* (Wreghitt's), a horse of extravagant action, and a prominent stallion in Yorkshire some twenty years ago. This latter horse was sold to go to America in 1895. *Mathias*, now standing in Scotland, is by a horse called *Grand Fashion*, one of *Lord Derby the Second's* get. On the death of Lord Londesborough in 1898, a memorable sale of his stud took place, but the stud farm was subsequently taken over by Mr. Robert Whitworth, who is one of the biggest breeders of the present day, and now owns *Polonius*. This notable stallion, who has been such a successful sire of prize-winning Hackneys and show harness horses, was originally bought by Mr. Burdett-Coutts at Lord Londesborough's sale for something like 600*l.*, and stood at the Brookfield stud for some years. After that he returned to his native home, having been bought back by Mr. Whitworth for a couple of thousand pounds, and he has, to use the latter's own words, been the best investment he ever made. *Polonius* shows most typical Hackney character, and is a very compact and shapely horse, with a good shoulder and deep through the heart. He is on the small side, standing some 15 hands, and is of a chestnut colour. The underlying feature of his success as a stud horse has been his remarkable capacity for imparting action to his stock. Another very successful sire at the Londesborough stud is *Beckingham Squire*, a son of *Polonius*, and bred by Mr. Burdett-Coutts. While he does not himself care much about showing, Mr. Whitworth, who generally has from 120 to 150 horses at his stud, is the

breeder of many notable show horses, and sells extensively to exhibitors. The well-known *Lord* and *Lady Seaton*, which have been shown so successfully by Judge Moore, of international show-ring fame, came from his stud, and many of the harness ponies brought out by Mr. Foster, of Mel Valley, were bred here, among them *Flame*, a great winner last year.

Another Hackney stud of prominent reputation is that of the Halls, father and sons, at Copmanthorpe, in the West Riding, not far from York. Mr. Thomas Hall, now living in retirement, originally started breeding Hackneys at Hanging Grimston, in the Wold country, near North Grimston, and there established his stud on a good foundation by buying *Garton Duke of Connaught*. Subsequently he transferred it to Langton (near Malton), a place of historical interest in the annals of the turf, being near the training ground used in John Scott's time. Now it also forms a link in Hackney history, for *Langton Performer* and other good Hackneys with the prefix "Langton" were bred here by the Halls. From there the stud once again migrated to Copmanthorpe, where, at the present, it is run by Mr. Arthur Hall. Old *Garton Duke of Connaught* still stands here. Though twenty-three years old, he looks fresh enough to pass for a much younger horse. His two companions at the stud are his son, *Copmanthorpe Performer*, bred by Mr. George Hall, and *St. Thomas*, both well-known stud horses in Yorkshire, and with a successful show career to their credit. Many winners have come from this stud, including *Lord Grimston*, *Langton*, *Lady Helmsley*, *Langton Masher*, *Dan Leno*, *All Serene*, and *Langton Performer*, alluded to above, who was sold for 2,500*l.*, and subsequently changed hands again for 5,000*l.* to go to America. *Dan Leno* was bought for export to Holland at a big price, and *All Serene* now stands at the Nork Park stud, Epsom Downs, Surrey, owned by Mrs. Frederick E. Colman.

Intimately connected with the Yorkshire Hackney breeding industry is the name of Mr. F. W. Buttle, of Kirkburn, near Driffild, and formerly of Thirkleby, Wharram, who owns the two noted stallions, *Rosador* and *Kirkburn Toreador*, both Champion winners at the London Hackney Show. One of the original foundation mares of Mr. Buttle's stud was *Jessie*, which he got from his uncle, the late F. Cook, of Thixendale, who possessed an old strain of Hackneys descended from the Ramsdale trotters. From her he bred another leading brood mare of his, named *Rosalind*, in 1881, and in 1892 she produced *Rosador* to *Danegelt*. *Rosador* has made a great mark as a sire, and sired a Champion—either stallion or mare—at the Islington Show for the last eleven

years. Among the best of his get are *Kirkburn Treador* and that fine mare, *Rosadora*, at one time owned by Mr. Galbraith. With *Kirkburn Treador*, who was bred by the late Hon. Mrs. Vernon, of Auchans, Kilmarnock, Mr. Buttle repeated the former championship triumphs of his sire at the London Hackney Show in 1909 and 1910. Holderness way, the Hedon stud (Mr. Arthur Fewson's) is one of first-rate importance. It dates its existence back to the early stud-book days, and has sent out some good prize winners, among the most notable being the mare *Brunette* and *Hedon Squire*, foaled here in 1891. This horse in the ownership of Sir Walter Gilbey won the Grand Championship for the best half-bred (*demi-sang*) stallion at the Paris International Horse Show in 1900 in open competition against all Continental breeds. This achievement was a great feather in the cap of the Hackney, and undoubtedly served to stimulate interest in the breed on the Continent, so having a far-reaching effect. In the North Riding Mr. John Wilson, of Kirby Misperton, who not long ago sold a stallion to the Japanese for 400*l.*, and Mr. Lovel Danby, whose stud is located at Swan Hill, Wykeham, have been prominent Hackney breeders for years. The latter owned a noted mare in *Dainty*, sire *Denmark*, with which he won a good deal in the nineties.

Among the names of the more noted Hackney sires used in Yorkshire during the last two decades one figures conspicuously, that of *Ganymede*—a big and strong chestnut stallion and fine mover, by *Danegelt*, belonging to Mr. Tom Mitchell, of the Eccleshill stud, near Bradford. He was bred by Mr. John Wreghitt, in the Market Weighton district, who was also the breeder of *Wildfire*, previously alluded to as the sire of *Polonius*. *Ganymede* has got much good stock, and though not perhaps as fashionable as some others, he has been a very popular sire. Other stallions to leave a mark in the county of recent years are *Conquest II*, also by *Danegelt* out of the celebrated mare *Brunette* (previously referred to), and the well-known *Copper King*, a Mathias horse, who stood one season at Mr. Henry Moore's place, and subsequently at Malton, in the North Riding. Both these stallions have been sold to Chili, *Conquest II* some four years ago, and *Copper King* last year.

Going back thirty-five or forty years, a horse called *Shepherd F. Knapp* is of some historical interest in connection with Yorkshire horse-breeding, and especially so with the Hackney breed, for he figures in the appendix of Vol. I. of the "H. S. B." as the sire of certain of the early stud-book Hackneys. This stallion, whose name recalls that of a famous horseman in the United States a generation ago, was an American trotter, of *Justin Morgan* descent, and had a considerable reputation on

the trotting track in his native country. He was imported into England in the sixties, and in 1869 was brought into Yorkshire and put to the stud, having passed into the possession of Major Stapylton, of Myton Hall, Boroughbridge, a prominent breeder, and the owner of a notable prize-winning hunter of that period named *Sprig of Nobility*. *Shepherd F. Knapp*, who possessed wonderful action as well as tremendous pace, won many prizes in harness at the Yorkshire shows, and was freely used as a sire in the county until his death in 1881, but for one season (1870) he stood in Norfolk. He proved a very impressive stallion, and got many valuable harness horses, being in numerous instances mated with roadster or Hackney mares. Among the original foundation mares at Mr. Burdett-Coutts' Brookfield stud there was a daughter of *Shepherd F. Knapp*, *Primrose* by name, bred by Aquila Kirby, of Market Weighton, which was very successful in the show-ring in the harness and roadster classes round about 1880. Mr. Burdett-Coutts became a strong supporter of the Yorkshire Hackney in the early eighties, when he established his famous stud, and the brood mares he brought together there were mostly Yorkshire-bred, among them being such historic mares as *Lady Lyons*, bred by Mr. N. S. Brough, a leading old-time Hackney breeder in the Market Weighton district; *Polly Horsley*, the dam of Wreggitt's *Wildfire*, and therefore granddam of *Polonius*; and *Lady Fireaway*, one of the best mares sired by old Triffitt's *Fireaway*. While Mr. Burdett-Coutts in some cases very successfully blended the Yorkshire and Norfolk strains of blood—as has been so generally done by breeders of recent times—the former always remained the predominant element at his stud. After the original Brookfield stud had been reduced, the remainder of the breeding stock was eventually transferred to Yorkshire, the stud now being located at Metham Hall Farm, near Howden, in the East Riding, where some forty or fifty Hackney brood mares are kept. The stallions standing here are *Last Fashion*, by *Brown Fashion* out of *Lady Fireaway*, and *Bellissimo*, a son of *Polonius*, both bred by Mr. Burdett-Coutts. *Brown Fashion*, who was sold to go to America, was sired by D'Oyly's *Confidence*, a classic Norfolk Hackney stallion of the seventies and eighties, while his dam was a thoroughbred mare.

The Hackney-breeding industry in Yorkshire entered upon its most prosperous epoch towards the eighties of last century, just when the breeding of hunters declined among farmers. Then began the great revival in the fortunes of the breed which led to the foundation of the Hackney Horse Society in 1884, together with the establishment of the stud-book and the institution of the London Hackney Show. Hackney-breeding

then suddenly began to come into fashion, and the breed gained many new adherents, among them some very influential supporters, in different parts of the country. Studs sprang up freely, which resulted in a greatly increased demand for stallions and mares, and prices went up accordingly. All this naturally gave a great impetus to the industry in Yorkshire, as well as in Norfolk. The East Yorkshire farmers who owned the old strains made a lot of money out of Hackney breeding, when the *Denmark*, *Lord Derby*, and *Fireaway* blood came into such great favour and was so eagerly sought after by those founding new studs. Concurrently with the increasing demand which arose at home, the foreign trade also expanded greatly, and this contributed materially to the prosperity of the breed, of which probably the largest share fell to Yorkshire breeders. It was in the eighties, when the Americans first commenced to go in strongly for the Hackney, and, in fact, started a boom in the breed, that the important and lucrative American export trade was developed. Italy and other Continental countries also began to buy Hackneys actively about this period, following the example of the French, who had been regularly buying up roadster and trotter sires, as well as some brood mares, in Yorkshire and Norfolk ever since the forties. Soon afterwards a considerable trade grew up with the Argentine, while the most recent development in connection with the Hackney export trade has been the springing up of a demand for the breed in Chili and in Japan. Yorkshire breeders have sold several stallions to those countries recently.

During the last seven years Hackney-breeding has been falling off in Yorkshire, as compared with the state of the industry some twenty years ago, when it was at its zenith. The cause of this decline is the much reduced demand for ordinary Hackneys, used for everyday harness work. Probably prices for this class of animal and for second-rate breeding stock are 50 per cent. lower than they formerly were, and thus many farmers who used to breed them have given up doing so. Hackneys of the best class, fashionably bred, and up to show form, remain in good demand and make big prices, so that breeders who are successful in producing these continue to prosper. The Yorkshire studs still, as of yore, easily maintain their remarkable supremacy in the show-ring, both as regards breeding stock and harness animals, for they send out a much larger proportion of prize winners at the leading shows than hail from any other part of the country, and this is only natural, seeing that the county comprises the principal breeding centre of pedigree Hackneys.

The divergences between the Yorkshire and Norfolk types of Hackney which existed in former times have been practically

obliterated since the establishment of the stud-book led to the fusion of these two branches of the breed. This is the case at any rate so far as concerns the stud-book Hackney. Both branches played their part in the evolution of the last mentioned, the intermingling of the two streams of blood having been attended with very successful results, but it is essentially from the Yorkshire lines of blood that the modern breed, as exemplified in the show-ring, has gained its quality and stylishness. As compared with the old-fashioned Norfolk type, the Yorkshire strains were always noted for their quality or breediness, a feature they derived from the plentiful admixture of "blood" present in the foundation stock of nag and roadster mares from which the Yorkshire Hackney was originally evolved by grafting on to it the Norfolk Trotter cross. Even subsequently, when the breed was fully established, an infusion of thoroughbred blood took place occasionally, if not frequently. For instance, the thoroughbred stallion *Bay President*, who stood in the county between the fifties and seventies of last century, was in several cases mated with Hackney mares, his name cropping up in several of the old Yorkshire Hackney pedigrees, and other similar instances could be cited from the early stud-book records.

Two breeds exclusively claimed by Yorkshire—for practically speaking they are not bred in any other part of the country, saving perhaps in a few isolated instances—are the *Cleveland Bays* and the *Yorkshire Coach Horses*, the former a very old indigenous breed established in the county as a pure type for a good many centuries, and the latter a comparatively modern offshoot of the Cleveland, evolved in the early part of last century by crossing that breed with a thoroughbred. Although, in theory, these breeds are reckoned as quite distinct from one another, and possess separate stud-books and breed societies, no such complete separation as would appear to be implied by these facts has really been maintained in practice, and there are many points of contact between them. They have in fact been a good deal interbred, and the trend in modern times always has been and continues to be towards a closer approximation between the two types, at any rate as regards pedigree-bred stock. Arising out of this, the question, as is well known, has before now been tentatively mooted of amalgamating them for stud-book purposes, but the general body of breeders, and especially so the supporters of the Cleveland, are strongly opposed to any proposal of this kind, which would so radically interfere with cherished and old-established traditions; and sentiment is a factor not to be lightly regarded in this connection. On the other hand, some breeders who are identified with the interests of these two breeds do not hesitate to give

vent to the opinion that they should never have been separated when the stud-books were founded. Still, quite apart from any mere question of sentiment, there are other strong reasons to be urged in opposition to the idea of amalgamation, nor is this proposition likely to be successfully revived, at least in the more immediate future, despite the fact that there is some overlapping between the two breeds and that inter-breeding is being freely favoured in frequent cases.

In olden times the Cleveland Bays were known generally as Chapman horses, a title that eventually fell completely into abeyance, and was after a time superseded by the present one, the changing of the name having probably coincided with the gradual evolution of the more modern type of animal from its aboriginal form. It was claimed for the old breed—and admittedly with perfect truth—that it was free from “black or blood,” *i.e.*, had neither a trace of cart-horse nor of thoroughbred blood in its veins, but represented an entirely pure-bred and distinct race of light-legged horses. While the old-time Cleveland was agricultural draught horses pure and simple, essentially blocky in shape, very sturdy and devoid of all quality, their descendants of the present epoch have undergone considerable modification in regard to type, being altogether lighter and more shapely of outline, and showing to a greater or less degree quality. Some of the best bred ones, indeed, are now but little—if at all—inferior to the Yorkshire Coachers in quality, and will pass muster as representatives of the latter breed. The general tendency, moreover, is to breed them with increasing quality. The breed formerly was very commonly characterized by a Roman-nosed head, a peculiarity now mostly bred out in the leading strains, though it still not infrequently occurs in some, and continues to be looked upon by old breeders as a sign of pure blood. The old-fashioned Cleveland Bays were also apt to be long in their backs, but they have of recent times been much improved in that respect.

At the beginning of last century the practice of crossing Cleveland mares with thoroughbred stallions in order to breed coach or carriage horses, and incidentally also weight-carrying hunters, was initiated, which finally led to the Yorkshire Coach Horse being developed as a separate type. At that period the Cleveland breed was extensively kept for farm work all over the North Riding and flourished greatly, extending also into other parts of Yorkshire and Durham, but soon afterwards, owing to changing conditions, it gradually commenced to lose ground. It was increasingly supplanted by cart-horses of a heavier type which then began to come into vogue for agricultural purposes in these parts, and in many cases it was crossed with cart stallions as well as with blood sires, the stock

of pure-bred animals thus steadily declining. A turning point in the modern history of the breed came in 1884, when its supporters, having recognised the need for active measures in order to ensure the preservation of the old strains, formed a breed society and established the Cleveland stud-book. This resulted in a revival of its fortunes at a timely moment, for in the seventies these had fallen very low. Another factor of importance which helped to revive interest in the breed during the eighties, was the brisk demand for Cleveland Bay, as well as Yorkshire Coach Horse breeding stock, which arose in the United States. A regular boom in these two breeds ensued over there at that period. This resulted in a rapidly growing export trade to that country, and even some breeders in Northumberland took up these horses at that time and exploited the demand for them. The Clevelands and Yorkshire Coachers were not kept separate in America, but fused into one breed, a common stud-book for them being founded. Unfortunately the American boom came to an end in the early nineties, the attention of breeders there being caught by the North German and French Coach Horses, which have now very largely superseded the Yorkshire breeds in America.

An historic patriarch of the Cleveland Bay breed in olden times was the *Hob Hill Horse*, a stallion that left a great mark in the Cleveland district a little over a hundred years ago, and who ranks as the principal foundation sire of the modern strains. His owner was John Weatherill, of Hob Hill, Skelton-in-Cleveland. Two other leading lines of blood were founded by *Dunsley's Dart*, a horse travelled in North Yorkshire round about 1760 apparently, and by *Barley Harvest*, who stood in the district at the same period as the *Hob Hill Horse*. Another noted old-time sire was *Skyrocket*, owned in the early part of last century by Thomas Masterman of Nunthorpe, a prominent breeder of that era, who kept several Cleveland stallions of repute, and who was closely associated with the development of the breed. In the thirties and forties a stallion called *Drover* had a considerable reputation as a sire of good stock, and was very successful in the show-ring. Among the most notable sires from the fifties onwards until the eighties were *Wonderful Lad*, and his son *Wonderful*, foaled 1866; *Brilliant*, foaled 1861, one of whose best-known sons was *Sportsman*; *Barnaby*; *Blandsby*, subsequently re-named *Emperor*, under which name he is recorded in the foundation volume of both the Cleveland and the Yorkshire Coach Horse stud-books; and *Fidius Dins*, foaled 1871, sire *Rosebery*, the last also having been a prize-winning horse of some note. There were about that period, and earlier also, a good many other Cleveland and Coaching stallions named

Sportsman, *Wonderful*, *Barnaby*, *Emperor*, and *Rosebery*, these names having been much in vogue with breeders of former generations, but these horses must not be confused with their more illustrious namesakes. The stallion *Sportsman* alluded to above, was bred by James Hindson of Ugthorpe, near Whitby, a very noted old breeder of Clevelands, who possessed a pure strain that went back for many generations. The country round Whitby was then, as it still is, a great stronghold of the Cleveland, some of the oldest strains having been preserved here with care and tenacity, and the breed continued to prosper and was freely supported in this neighbourhood at a time when it was allowed to fall into neglect almost everywhere else in its native parts. Another well-known old breeder was Thomas Peart, of Great Ayton, who owned a noted brood-mare called *Darling* that won many prizes some fifty years ago. *Fidius Deus*, after having changed hands once or twice previously, was bought by the late Hon. James Lowther, who had a stud of Clevelands near Redcar, and was a great supporter of the breed until his death ten years ago, though he had given up his stud some years before. He did much to advance its interests at a time when support was badly needed, and took a prominent part when the Cleveland Bay Society was founded, becoming one of its first presidents.

One of the best known Cleveland stallions of more recent times probably was *Sultan*, who was sold in 1886 as a two-year-old by his breeder George Leefe, of Fryton, Slingsby, to Mr. Burdett-Coutts for his Brookfield stud, where a very representative collection of Cleveland Bays and Yorkshire Coach Horses was got together. Of these two breeds, Mr. Burdett-Coutts' preference was essentially for the latter one and for the quality type of Cleveland, his object being the breeding of carriage horses. As is well known he commenced systematically to cross the Hackney and these old Yorkshire breeds, and so bred some fine strains of harness horses. *Sultan's* grandsire was the noted *Emperor*, whose original name was *Blandsby*, already mentioned above. He had a very successful show career, and won repeatedly in the classes for coaching stallions at the Royal and Great Yorkshire Shows in the late eighties. *Sultan* showed much quality for a Cleveland at that period, and partook largely of the Coach Horse type, while he had very good action. Among the Cleveland and coaching matrons of choice blood at the Brookfield stud there was a notable mare called *Fanny*, a prominent winner at the Yorkshire shows at the end of the seventies and in the early eighties. She was bred by Thomas Jackson, of Ugthorpe, and came of one of the many old-established strains

around Whitby. Mr. Burdett-Coutts got her from Mr. (now Sir) A. E. Pease, who formerly had a stud of Clevelands at his place, Pinchinthorpe House, near Guisborough, and who has always consistently supported the breed. Among the stallions the latter owned were *Reform*, a horse of exceptionally dark colour for a Cleveland Bay, but of the purest breeding, *Bay Benedict*, *Rampage*, and *Leatherback*. Two other foundation mares at Brookfield also came from the Pinchinthorpe House stud. These were *Policy*, a Cleveland, and *Bayonet*, a coaching mare, which both ranked as leading prize-winners in Yorkshire some thirty years ago.

Amongst the principal breeders of Clevelands at the present day are Mr. George Elders, Mr. G. Scoby, Mr. F. H. Stericker, Mr. John Lett, Mr. Welford, and Mr. J. H. Tyreman, all being well-known exhibitors at shows. Several of the leading Cleveland breeders also breed Coach Horses, and indeed are among the breed's chief supporters, a fact which shows how closely the interests of the two varieties are in some respects linked together. Mr. Elders, of Toff House Farm, Aislaby, a well-known farmer in the Whitby district, admittedly owns one of the best strains of Clevelands there are to-day, and has been continuously successful in the show-ring. He commenced breeding them some twenty-three years ago, his chief foundation mare upon which the strain has principally been built up being the famous *Lady Stainthorpe*, now quite old, which used to be prominent at the shows in the nineties. She has bred some excellent stock, including *Hawthorn Hero*, who took second at the Royal at Norwich last year, and she is the granddam of that fine mare *Aislaby Beauty* (re-named *Hinderwell Beauty*), which has of recent years been very successfully shown. The last is now owned by Mr. Tyreman, of Pond Farm, Hinderwell. Among the more notable Clevelands latterly bred by Mr. Elders was *Hawthorn Beauty*, by *Rosedale* out of *Aislaby Beauty*. She is a mare of outstanding merit, and of such great quality that she would readily pass as a coaching mare. She won at the Royal in '10 and '11, and was subsequently sold for a good price to go to South Africa where she will assuredly prove a good advertisement for the breed.

An important stud of Cleveland Bays and Yorkshire Coach Horses is that of Mr. George Scoby at Beadlam Grange, Nawton. *King George the Fifth*, who is one of the leading Cleveland sires of the present time, stands here. There are also several small breeders of coaching stock in the neighbourhood of Nawton which lies near Kirby Moorside. This district was at one time an important centre for the two breeds, and some old-time Kirby Moorside breeders possessed very good strains of Clevelands, but that breed lost ground here—

as elsewhere—when these men died out and a new generation failed to support it as of old. Not very far from Kirby Moorside is Duncombe Park, Helmsley, where the Earl of Feversham used to breed a few Clevelands, and where he has generally kept a stallion of the breed for the use of his tenants in the dales. In the opposite direction lies Pickering, and here Mr. Frank Stericker, about as well known as anybody to-day in connection with the Cleveland and Coacher, has the stud which he started about 1877, and which for the most part consists of Coach Horses, but includes some good Cleveland Bays. Some of the best representatives of these breeds during the last thirty years have been inmates of this stud at various times, and many horses have been sold abroad from it, Mr. Stericker being a leading exporter. He owns at present a notable Cleveland Bay stallion in *Radium*, a horse with great bone and substance and of the old-fashioned type from which breeders have been increasingly departing. This sire has got some first-rate stock, amongst the best of his get being *King's Herald*. Mr. Stericker's chief stallion is the crack Coach Horse *Breaston Prince*, one of the best of his breed. He is by *Beacon Prince*, dam by *Sultan*, of Brookfield fame, and has had a very successful show career, having among many other successes gained championship honours at the Yorkshire Show five years in succession from '06 to '11. *Breaston Prince* is a grand type of Coacher, standing 16.1 hands, with plenty of quality and withal ample bone, and he is also an exceedingly brilliant and taking goer. For action he would indeed be hard to beat. He has sired many good horses, including *Gauntlet* and *Eastern Prince*, and his stock have done remarkably well in the show-ring, so that his blood now is very fashionable. Another stallion of note who until recently stood here was *Lord Chief Justice*. The pick of Mr. Stericker's brood mares is *Elena*, a big winner in Coaching classes, by *Anaroyd*, who was sold to go to Chili for 200*l.*, out of *Princess Beatrice*, a Cleveland mare of the quality type and dam of the coaching stallion *Granville*, who was prominent at leading shows some years back.

Mr. John Lett, who has a well-known and large stud at Rillington, near Malton, is another prominent supporter of both Clevelands and Coach Horses. He won at last year's Royal with *Cholderton Luck*, and among other sires owned by him may be mentioned *Speciality*, and his son *Special Delight*, both Coach Horses; the latter's dam having been by the thoroughbred *Touchwood*. *Speciality* was sold to go to South America after a few seasons at the stud here, and *Special Delight* has been exported to South Africa. Turning northwards to the Cleveland district, the original home of the breed,

the chief breeder of note is Mr. John Welford, of the Grange, Loftus, who possesses an old-established strain. One of his foundation mares was *Madam*, a daughter of old *Fidius Deus*, and a mare of much note at shows in the eighties. From her he bred his stallion *Pitch and Toss*, a sire who has made a great mark, but who is now over twenty years old. His sire was *Luck's All*, who also was a stallion of much reputation in his day. *Pitch and Toss* affords yet another striking instance of the close relationship existing between the Cleveland and Yorkshire coaching breeds, for his name is recorded in both the C. B. and Y. C. H. stud-books. He is a typical, thick-set, old-fashioned stamp of horse, with strong Cleveland character. Another breeder of Clevelands in this part of the county is Mr. Thomas Knaggs, of Tofts Farm, Marske-by-the-Sea. He owns *Saltburn Favourite*, a descendant of *Brilliant*, and bred by himself. This horse stands in the front rank as a sire. Until recently Mr. Wilson Horsfall, of Potto Grange, near Northallerton, and Mr. George Grandage, of Moorcroft Yeadon, in the West Riding, were prominent breeders of Clevelands and Coach Horses. The former owned a good sire in *Broomgrove Pride*, and still has the famous mare, *Lady Salton*, which was invincible in the show-ring some seven years ago.

The breeding of pedigree Cleveland Bays and Yorkshire Coach Horses is now concentrated in the hands of a comparatively small number of breeders, and new supporters to replace those who have dropped out, owing to death or from other causes, are not, apparently, very readily forthcoming. Admittedly the numbers bred have declined in the course of the last six years or even longer. However, there are a good many farmers who own non-registered mares of these breeds—though they may not actually be pure bred—and they breed them in a small way, rearing one or two, or perhaps three foals each year. A fair number of Cleveland and coaching stallions are found in the North Riding, but in the East and West Riding there are only quite a few of these about. The breeding ground of the two breeds at the present time extends in the main from Malton and the Vale of Pickering northwards up to a line drawn, approximately, from Saltburn on the coast to Yarm, and thence towards Northallerton and Bedale. The country round Yarm, Guisborough, and Stokesley, comprising as it does the heart of the Cleveland district, was in former times the chief centre of the Cleveland breed, but it ceased to be so when cart-horse breeding gradually gained the upper hand in that part some forty years ago. The Yorkshire Coach Horse, which is the more numerous of the two, has a wider range than

the Cleveland Bay, and is bred also, to some extent, all along the coast of the East Riding, including Holderness. This place is nowadays, however, no longer such a noted Coach Horse breeding district as it was in times past, the numbers of the breed here having become much diminished as compared with what they used to be a generation ago. Some fifty years back the Coach Horse also had a strong foothold, and was extensively bred between York, Selby, Howden, and Market Weighton; in fact, some of the oldest coaching strains originated here in Howdenshire, but after the sixties the breed was gradually ousted in this district by the Hackney. The Druid, alluding in his writings to the Coach Horses bred here in his time, speaks of them as follows:—"Among the coachers we look in vain for the old Cleveland bays, such as Howdenshire loved, and which once drew the heavy family chariots at six miles an hour. They have been gradually crossed up with blood sires, so that if any foal from a Cleveland mare falls smarter than usual, the breeder can cut its tail and call it a hunter." This throws an interesting side-light upon the early history of the modern Coach Horse breed, showing how certain strains of it were developed in East Yorkshire upon a Cleveland foundation, and incidentally affording a proof that the Cleveland Bay was in former times a good deal bred in the East Riding. The old breed here was, however, eventually completely transformed into coaching stock through crossing with the thoroughbred, and this in its turn has largely sunk its identity in the general half-bred stock as found in East Yorkshire at the present time.

One of the various thoroughbred stallions which originally played a part in the evolution of the Yorkshire Coach Horse was *Don Juan*, whose sire was the famous racer, *Orville*, and who, in the early part of last century, stood in the Catterick Bridge district, and there got some excellent coaching stock out of Cleveland mares. Another one was *Paulinus*, a sire of some note about 1835, but he was a cocktail, having had a stain in his pedigree; and several other old foundation stallions from which coaching strains are descended were also of cocktail breed. Of the colts resulting from the cross between the thoroughbred and the Cleveland Bay, some were kept entire by their owners, and in their turn used as sires, and so a distinctive type of half-bred Coach Horse became gradually established. The infusion of thoroughbred blood into the breed, and its recruitment from fresh crosses between the blood sire and Cleveland mare has been freely continued in modern times. This stock had its position as a distinct breed definitely regulated in 1886, when its supporters formed the Yorkshire Coach Horse Society, and founded a stud-book.

From the strong element of thoroughbred blood in its composition the Coach Horse derives plenty of quality, while breeders have succeeded in breeding it with a good deal of action; some coaching horses, indeed, being very fine all-round movers. These features, together with its size, which ranges from 16 hands upwards, its good length of body, the well-set-on and well-shaped neck, the long, elegant, and level quarters, the sweeping top-line, and its commanding appearance, constitute its salient points. In its general aspect, the breed exemplifies the big carriage-horse type, such as is considered correct for the horsing of barouches, landaus, and State carriages. Its colour, like that of the Cleveland Bay, is exclusively bay of varying shades, and both these varieties breed perfectly true to colour. In the modernised or quality type of Cleveland, the same general characteristics are found as in the Coach Horse, but the former generally has—or at any rate is supposed to have—more substance, and is thicker set and heavier of build, this being the principal point of difference between the two. The best and most important points about the more old-fashioned, rustic stamp of Cleveland Bay, as exemplified for instance in the stallions *Pitch and Toss* and *Radium*, or in a lesser degree in Mr. Elders' mare, *Lady Stainthorpe*, are its strong bone and massive substance, and it is largely, if not mainly, on account of its possessing these points that this old type is so valuable, and that its preservation, as far as modern requirements will allow, is to be strongly urged. There is, however, no gainsaying the fact that Clevelands with more quality and action, or in other words, with more style about them, are most saleable, and it is this type, too, which is mainly favoured in the show-ring.

A foreign demand for Clevelands and Coach Horses has existed ever since the early years of last century. About the thirties and forties, stallions of these breeds were imported into the German Duchy of Oldenburg, and there helped to found the well-known Oldenburg coach horse breed, which has now so largely ousted the Yorkshire breeds in the United States, where it goes under the name of the North German Coach Horse. Cleveland and Coaching blood was also originally infused into the Hanoverian horses, another of the leading Continental light horse breeds; while the Dutch used this blood very freely in building up their breed of harness horses, which in recent times has furnished a large proportion of the foreign carriage horses imported into this country. A considerable number of stallions and many a mare used in former times to go into Holland from Yorkshire. The export trade reached its fullest development during the years of the American Cleveland boom, when some of the best stallions went to the States. Subsequently it fell off. The demand from abroad is now principally for

Coaching stallions, while only a few Clevelands have latterly been sold to foreign buyers. The Yorkshire Coach Horse Society has during the last few years annually issued on an average some ten export certificates for registered stallions, and from two to six certificates for mares. The countries which chiefly buy them are the Argentine, Chili, the United States, and Canada; Russia and South Africa have also taken a few at intervals. Besides these registered stallions and brood mares, exported for breeding purposes, a certain number of non-registered and part-bred young mares of both breeds continue to be bought by Continental dealers and importers, primarily for carriage work, though ultimately they are used at the stud. At one time Mr. Stericker sold Coaching stallions to the late King Humbert of Italy, but the Italian demand has ceased. King Humbert was a great admirer of these Yorkshire breeds, and bought upwards of a hundred carriage geldings, mostly Coach Horses, but also some Clevelands, for his State carriages.

The "Great Yorkshire" is the most important show fixture in the county for Cleveland Bays and Coach Horses, while other leading venues where the breeds muster well are the Northallerton, Stokesley, Easingwold, and Malton Shows. Coaching horses in particular are usually to the fore at the last two, though the Malton Show does not, nowadays, draw anything like such a numerous entry as it did in former times when Coach Horse breeding in this district was more flourishing. Good Cleveland Bay classes are also usually seen at the Cleveland Show, at Egton Horse Show, and at the local Whitby fixture. The more important shows for horses in the East Riding are Driffield, though this is not so good as it was, Bridlington, and Beverley; while in the West Riding, the Wharfedale Society's Show at Otley is reckoned one of the leading functions by horse-breeders.

Very different from what is the case with the light horse breeds, the rise of the *Shire* horse in Yorkshire dates from comparatively recent times: Although the breed was, of course, introduced from Derbyshire, Notts., and Lincolnshire, and crossed with the native cart-horse stock at a considerably earlier period, and had previously gained a foothold, especially in the West Riding, it was not until about the year 1878 or later that Shire breeding became really fashionable in the county and developed into the important industry it has now become. Its rapid expansion at that time was brought about largely in response to the increasing demand for Shire draught horses of heavy type in the industrial centres—a demand which ensured a remunerative and certain market. But the great impetus given to Shire horse breeding generally throughout the country, consequent upon the formation of the Shire Horse Society,

also undoubtedly had a very marked effect in popularising the breed on Yorkshire soil, to which, originally, the heavy hairy-legged cart-horse, indigenous in the Midlands and Lincolnshire, was entirely foreign. That is speaking of a hundred years ago, or more.

The great stronghold of the Shire in its purest form in the county ever since its first introduction here has been in the southern part of the West Riding, and particularly in the country round Doncaster and Snaith. Some comparatively old strains are established here, and it was in this neighbourhood that the famous stallion *Bar None* was bred in 1877; he was reckoned one of the best Shire sires of his day, and made a great reputation for himself. Mares of his blood especially proved very successful matrons and threw many winners. His breeder was Thomas Holmes, of Fenwick Hall, near Doncaster, and he subsequently passed into the possession of old Mr. James Forshaw. *Bar None*, whose quality and good legs were two of his leading attributes, while he was also of big size, came on his dam's side of a Yorkshire-bred strain, she having been got by *Great Britain*, a local horse. His sire was *Lincoln*, a stallion of some note, who was bred in Lincolnshire. From the West Riding the breed gradually spread northwards and eastwards into other parts of the county, the native farm horses being increasingly crossed up with heavy Shire blood and so eventually becoming transformed into the Shire-bred type which predominates everywhere at the present time. Shire stallions are very extensively kept throughout Yorkshire, and during the last decades cart-horse breeding has made much progress here. But the expansion of this industry has of course had its effect in curtailing the production of light horses. One of the foremost Shire studs in the county is that of Lord Middleton at Birdsall, which was founded about thirty years ago. The first stallion used here was *Northwood*, while *Silver Queen*, a prominent show-ring winner in her time, was the chief matron of note among the original brood mares. Some of the best animals now in the stud trace their descent back to this mare. In 1897 the well-known stallion *Menestrel*, admittedly one of the best and weightiest horses of the day (he weighed 23 cwt.), joined the stud, and proved a great acquisition. He was by *Hitchin Conqueror* out of *Madrigal*, his breeder having been Mr. Freeman-Mitford, now Lord Redesdale. *Menestrel* stood at Birdsall for fourteen seasons, and died three years ago at the age of twenty. Among the many good horses sired by him, *Birdsall Menestrel*, Lord Rothschild's champion stallion, ranks as the most notable. He was bred at Birdsall, his dam, *Birdsall Darling* by *Northwood*, still being one of the brood mares here. Among the many

good stallions of minor note that have stood at this stud in the past, one of the best was *Calamite*, a son of *Northwood*. The stallions at present in the stud include such fashionably-bred horses as *Dunsmore Jameson II* by *Dunsmore Jameson*, *Bepton Dray King* and *Draughtsman* by *Tatton Dray King*, *Birdsall Forest King* by *Redlynch Forest King*, *Peakirk Harold* by *Lockinge Harold*, *Birdsall Calamite* by *Calamite*, and others. *Dunsmore Jameson* was purchased at the late Sir P. A. Muntz's sale three years ago, specially to cross with Menestrel mares. He has exceptionally good limbs and fine action, and his produce have already done well at leading shows. Great things are also expected of the three-year-old *Birdsall Forest King*.

Some good Shire stallions are kept by Mr. Wickham-Boynton, of Burton Agnes, for the use of his tenants and of other farmers in the district, his present ones being *Cross Bar* by *Fear None*, *Penley Warrior*, and *Burton Agnes Drayman*, by that good horse *Drayman XXIII*. *Cross Bar* has stood here for several years, and has sired very good cart-horse stock. Among other breeders in East Yorkshire keeping a Shire stallion are Messrs. Hodgson, near Beverley, of hunter-breeding note, and until recently Mr. Robert Whitworth, owner of the Londesborough Hackney stud. Numerous Shire foals of weighty breed are raised and grazed between Selby and Doncaster, and this district claims two leading Yorkshire Shire studs, these being the Knottingley stud, not far from Snaith, belonging to Mr. J. C. Jackson, and Mr. Walter Johnson's stud at Hatfield. Both make their influence strongly felt here. South of Doncaster, too, towards the Derbyshire and Nottinghamshire borders, they breed many heavy and good Shires. A local association of breeders here, the Doncaster and District Shire Horse Society, annually hires a stallion for the use of its members. The Wharfedale district is another Shire breeding ground. Among the headquarters of the breed in the West Riding is Mr. A. Grandage's stud at Bramhope, near Leeds, which has latterly been in considerable prominence in consequence of the successes of the well-known *Gaer Conqueror*, who stands there and who was the Champion stallion at the Islington Show in 1910 and 1911. He is Gloucestershire-bred, and a very big, stylish, brown horse, standing over 17 hands.

In the North Riding, the breeding of cart-horses probably flourishes as much in the Cleveland country as anywhere, the industry in that part having been fostered since the sixties by the local industrial demand for draught horses of weight. The heavy hairy-legged cart-horse has here practically wholly ousted the indigenous Cleveland breed. Besides Shire stallions, some Clydesdales are used in these parts, especially so in the

Stokesley district. But though sires of the last mentioned breed are still travelled in North Yorkshire, they no longer hold the sway here they did in former times. At one period, such stallions enjoyed a high degree of favour with cart-horse breeders, and were freely used in the county. Lord Middleton originally had a Clydesdale sire, by the noted *Prince of Wales*, but soon gave up that breed, and decided wholly in favour of the Shire. Some Clydesdale stallions, too, generally stood at the Branhope stud in the nineties, alongside of the Shires, and Mr. Frederick Reynard, of Sunderlandwick, has occasionally hired one from Scotland for use in his district. The Scotch breed did not, however, in the end, successfully contest the supremacy of the heavier Shire, the call being all for cart sires of the most weighty type to breed a saleable draught gelding, and so the latter has in the course of the last two decades almost entirely superseded the one-time popular Clydesdale.

A comparatively light and very active stamp of Shire-bred cart-horse is bred by the farmers in the Wold country, which represents a most useful agricultural draught type, but here, as also elsewhere in the county, there still remain in evidence horses embodying the characteristics of the old-fashioned black cart-horse breed which prevailed in East Yorkshire and the West Riding in former times, before the fashion of crossing up the stock with Shire and Clydesdale blood set in. The representatives of this old indigenous breed are tall black horses, rather coarse of shape, and comparatively clean legged. Having been a prevalent colour among the farm horses at an earlier period, black continues to be considerably favoured, and there are yet farmers who for this reason prefer, in mating their mares, to use a black or dark brown Shire stallion rather than a bay one.

The breeding of *Ponies* is not a specially notable feature in Yorkshire, but some good Hackney-bred harness ponies are bred here, chiefly by Hackney breeders, though farmers also occasionally breed a stylish pony of this kind from an ordinary pony mare put to a Hackney sire.

The number of polo ponies raised in the county is only small, there being very few who breed them. The principal polo pony breeder is Mr. Howard Taylor, of Hampole Priory, near Doncaster, who owns a nice stud; and Admiral Bridgeman breeds a few at Copgrove Hall, near Leeds.

Lord Middleton has some good ponies of the Highland breed at Birdsall, introduced from Scotland, and the mares have in some cases been very successfully crossed with the thoroughbred. A typical Highland pony stallion stands at stud here, to wit, the grey *Comaroich* by *Borodale*.

HENRY E. FAWCUS.

IMPLEMENTS AND TILLAGE.

THE modern farmer suffers from rather too much good advice, and though he probably takes most of it at its real value, there is no doubt that undue prominence is given in agricultural literature to the use of artificial manures. A season, such as the one we have just passed through, enforces the lesson that good cultivation is by far the most important factor in the successful growth of our farm crops. The researches of agricultural chemists have established rules for the use of manures and feeding stuffs which every farmer must apply in his practice, but in the actual cultivation of the soil we are still working in the dark as far as scientific enlightenment goes. In the last few years mechanical, as distinguished from chemical, analysis of soils has been developed, and has given much useful information, showing how the distribution of the more important crops is perhaps more affected by differences in the texture of the soil than by the more evident factors of climate and rainfall. But we have no scientific standards by which we can measure and classify the different tilths required for various crops, and the successful preparation of the soil can only be learnt by long experience, which fact probably largely accounts for the avoidance of this subject in current literature.

This being so, each one's ideas on cultivation are necessarily somewhat coloured by the particular usage of his own district, and any attempts to lay down set rules for tillage must be taken with the proviso that, though such rules have been tested on perhaps a large variety of soils, there will be found exceptions for every rule that can be formulated.

Though nearly all our modern implements have their prototypes in forms in use a hundred years and more ago, the sum which a twentieth century arable farmer has to allot to dead stock is very much greater than was formerly required. A hundred years ago most farms were fully stocked with the larger implements if they had ploughs, harrows, and waggons. Now the great manufacturers of implements are continually evolving new types and improving old ones, and the farmer who wishes to be up to date in his machinery would find that to test even a tithe of the latest models would cause a very heavy drain on his capital. It may be of interest to consider some of the more recent developments in tillage implements and how they have affected tillage operations.

The Plough.—Compared with the great changes and improvements in machinery for other purposes than agriculture—milling, printing, textile trades, &c.—it is remarkable what slight changes we find in modern ploughs when compared

with the older forms. As long ago as the forties, Wren Hoskyns, charming writer but rash prophet, condemned the plough. In the *Chronicles of a Clay Farm* we read, "I say the plough has sentence of death written on it *because it is essentially imperfect*. . . . Why poke an instrument seven or eight inches under the clod to tear it up in the mass by main force *for other instruments to act on*, toiling and treading it down in ponderous attempts at cultivation wholesale?"

That was written in the early days of steam cultivation, and the author's idea of the future of tillage was "a steam-driven circular cultivator," which was to cut its way across the land, throwing up behind it a "perfectly comminuted seed bed as fine or as coarse as the engineer required."

This, and all other attempts at machinery to produce a seed bed direct from whole land at one operation, even if successful, would have a very limited scope. They leave out of reasoning the prime factor in cultivation—the natural effects of changes of moisture and temperature. No seed bed was ever made by force to compare with that produced by a few turns of the harrows on a well-weathered winter furrow. We actually economise labour by spreading the operations of tillage over a long period, each one at its proper season, whereas with any form of "complete tillage machine" all the work would be crowded into a few favourable days. The plough, then, is still the main implement of tillage and is likely to remain so. There cannot be said to be any important improvements in ploughs of recent years, and as long ago as the Hull meeting of 1873 the best ploughs described in an exhaustive report were practically the same as those of the present day. At one time it was predicted that the steel chill digging ploughs would supersede the older forms. But Messrs. Ransomes, Sims & Jefferies, who courteously answered some questions I asked them, tell me that in their experience the digging plough has not made any headway in the last decade. Where they are generally used I think it is more from the fact that the detachable and very strong point of the share in these ploughs will stand in rocky ground better than the ordinary chilled cast iron shares, than from any superiority in the form of the furrow made. My own experience is that the digging plough is most useful for summer fallowing. The wide share cuts all the thistles, and a fourteen-inch furrow is no small gain over one of ten inches in a day's work. But in ploughing for spring corn after sheep, and still more in ley ploughing, their great fault is that they produce a furrow which harrows into a very uneven tilth, large clods, mixed with fine mould, which with a drying east wind soon become unbreakable. Turning to the older forms, I have often been struck by the fact that

though the standard types of ploughs made by the great firms of implement makers are found all over the country—I mean those with a mould board of fair length, turning an unbroken rectangular furrow—yet in many districts with which I have practical acquaintance a local form of plough still holds its own. Here in East Sussex we have the old “foot plough,” a simple form of wooden turn-wrist plough, having an L shaped standard, or foot, in place of wheels, and turning a wide furrow which, though not so much broken as the digger’s furrow, is still thoroughly cracked so that the action of a winter’s frost has full play on it. Then in Norfolk they have the old form with “gallows” and a short breast turning slightly broken furrows, and in Suffolk the short breast is also preferred. On the Berkshire hills the “screwhead” ploughs still hold their own; and in Kent the “hare back” completely inverted furrow, turned by the ponderous wooden ploughs or the more modern iron balance ploughs, has no competitors.

It is difficult to say how far local usage may be relied on; I understand it is in the North and Midlands that the unbroken rectangular furrow is preferred. But speaking generally, the slightly broken furrow seems the most useful form and most in request nowadays. That is the form of furrow generally preferred on the multiple ploughs to be drawn by tractors, and it may be assumed that the owner of a tractor will be as up to date in his ploughs as in his method of drawing them.

One advantage in the present day of the slightly broken furrow slice is that the work requires less skill, or rather, that the bad effects of lack of skill are less apparent than with a quite solid furrow. Bad ploughmen are more common than good ones nowadays. It is in ploughing for a corn seed bed that the effects of badly ploughed rectangular solid furrows are most apparent. Where land has been well ploughed with even furrows well packed together and showing a good crest, the harrows will produce plenty of mould, while the unbroken base of the furrow gives the firm bottom required by cereals. But with bad work, where the furrow slices are not of even size, some standing up on edge, some flung perfectly flat, on subsequently harrowing an uneven tilth is produced; the harrows break the upright furrows into large clods and make no impression at all on the flat ones. So the cultivator is brought out to tear the ground *up* into a tilth, where the harrows on well-ploughed furrows would break it *down*, and the firm bottom is consequently lost. Now, with a fairly short breast you get a slightly broken furrow which minimises these faults of bad workmanship. In light land districts double-furrow ploughs are now very common, but their use is limited

to those soils which can be *easily* ploughed with two horses in a single plough, and, pending the introduction of a really satisfactory and low-priced agricultural tractor, it is difficult to see how the ploughs of the present age can be improved on.

Cultivators.—The development of the light steel cultivator with spring or semi-rigid tines and renewable points is the chief modern improvement in tillage implements. There were cultivators a hundred years ago, but they were all heavy and unwieldy in construction and working. The modern “sickle tine” cultivator is an indispensable tool on the majority of arable farms. In fallowing foul land where several ploughings are required the use of the cultivator will save at least one ploughing in three, which often means that land can be thoroughly cleaned in time to grow a green crop, which will pay for the cleaning, instead of having a clear fallow. Bare fallows, however, cannot be dispensed with on really heavy clays. It should also be remembered that the very usefulness of these implements tempts one to shirk another ploughing where it is really necessary. Mr. Rider Haggard’s pessimistic labourer in *A Farmer’s Year*, who said farmers nowadays farmed with the hoe instead of with the plough, put his finger on one of the weak spots of modern tillage. Three or four turns of the cultivator take almost as long as a ploughing, and then do not cut all the thistles. But a double turn of the cultivator *across* the furrows of the first spring ploughing will practically produce the same result as where the land is ploughed again at once to get a fine enough tilth for harrows to work on. If farmers of Arthur Young’s days had had modern cultivators we should not read of three or four ploughings for barley to reduce the clods. It is most important with these cultivators to cross the furrow. Some of them, though keeping their depth till they bring the team to a standstill, have rather much side play, and are apt to “hunt the furrow” when used in the direction of the ploughing. In fact, I know one large hop-grower who has discarded his hop-garden cultivators and returned to the old rigid tine “shim” on this account, for with permanent wirework all hop cultivation must be along the furrows.

In autumn cultivation the use of these implements has limits. For smashing up a fairly clean bean or pea stubble they are unrivalled, but with much rubbish the tines choke too much, and even with specially broad points a better job is made by first ploughing or using a skim plough or other form of broadshare followed by harrows.

Harrows.—In the report of the trials of implements at the Hull Show in 1873, the judges commented on the difficulty of distinguishing between harrows and cultivators. At the present

time the difficulty is increased by the number of "spring tooth" and other so-called harrows. One rule is that anything with wheels is a cultivator, but the true distinction is still in the shape of the tines and the work they do. A straight tine implement, a typical harrow, makes a seed bed from *above*, working the land *down* into a tilth; a curved tine, whether rigid or springing, makes a seed bed from below. We speak of harrowing *down* furrows, and breaking *up* with the cultivator. The harrow tightens, the cultivator loosens. The typical seed bed produced by harrowing only we get well exemplified in growing mangold. It is generally recognised, I think, that on many medium to heavy soils where mangolds are grown on the flat, the best, and often the only, way to get a plant is to dung and plough in autumn and not touch the furrow again till you are ready to sow, then simply harrow and drill and roll in. In this case using heavy harrows, then lighter ones, the furrows are worked down gradually, each turn of the harrows producing more fine mould, leaving the clods on top to be further reduced, and no fresh unweathered soil is brought up till finally the lightest seed harrows complete the operation ready for the drill. Here you have a perfect seed bed, even depth regulated by the weight of the harrows (no leverage brought into play), and plenty of fine mould consolidated by the continual harrowing, for the delicate mangold seedlings to take root in. Had the cultivator been employed it would have torn *up* the furrows and brought unweathered soil to the surface which would not harrow down, but would have to be disintegrated by main force, producing a harsh unkindly tilth. In fact an East Sussex farmer will tell you that you must only use "horse harrows"¹ for mangold, and that mangold does not want a deep season. This is simply because of the fear of bringing up clods; so long as the top soil is kept at the top the deeper the tilth the better, if fairly firm. But in preparing a seed bed for swedes and turnips the conditions are different. We then want an implement to go right to the bottom of the newly-turned furrow and bring up all clods and root weeds to the top, to be dealt with by harrows and rollers, and here, on light lands, the spring tine cultivators and harrows, and on heavier soils the semi-rigid sickle form, are a very great improvement on the old heavy, rigid cultivators, doing the work better and at much less expenditure of horse power.

In cleaning land very full of couch a turn of the cultivator across the furrows followed at once by a heavy *double* rolling—the first to press down the clods, the second to smash them—followed again by the cultivator and harrows, will generally

¹ NOTE.—Light harrows are still called "horse harrows" in Sussex to distinguish them from *ox* harrows!

make a much better job of separating out the rubbish than the more usual text-book plan of alternate harrowings and rollings.

In connection with couchy land one very modern implement will be found of great use, and that is the side rake. These are very much better than the ordinary horse rakes with lifting tines, for collecting couch, as they sweep it into rows without picking up the small clods. There are many improved forms of chain harrows with tines which, besides being more effective for grass harrowing than the old types, are also very useful for collecting couch. But personally I have found nothing better for this purpose than a light plain chain harrow, which rolls the couch up into wads easily picked up by the rake.

Drills may be classed also as tillage implements. The forthcoming trials by the R.A.S.E. will be awaited with great interest. What is wanted is an effective form of hind steerage to get as good results as the ordinary fore-carriage steerage and save a man. The modern forms of cutting coulter are very effective in saving draught, but it is doubtful whether the old Suffolk pressing coulters, giving a firm bed for the seed, is not still the most favourable to germination.

The ingenuity of inventors has perhaps more scope in producing agricultural implements for dealing with the results of tillage, harvest machinery, &c., rather than in the actual tillage operations, so that, at any rate at the present day, we can still say, with Mr. Greening, of the "Clay Farm," that we are not yet "ashamed of the plough."

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Bath

AN INVESTIGATION INTO THE VALUE OF FERRO OR RE-INFORCED CONCRETE FOR FARM AND ESTATE PURPOSES.

THE question of economy in building construction is one that becomes more pressing year by year. Apart from the increased cost of labour, some of the essential materials, particularly foreign timber, are undergoing a considerable appreciation in value; the adoption of Building Bye-Laws by Local Sanitary Authorities in many places has brought about the introduction of higher standards both of design and of construction than in the past, whilst the improvement in the social condition of the labouring classes has necessitated still further attention to these points. The combined effect of these factors is that, so far as

cottage building is concerned, construction has become too expensive to make it possible for the landlord to get a reasonable return on his outlay. In those parts of the country where "mud" cottages were the usual type erected during the earlier part of the last century, the want of cottage accommodation is apt to be particularly felt, for these old houses are being condemned and destroyed daily, and in spite of rural depopulation there are not enough of the better type of cottage to supply the demand in many localities. Consequently it happens not infrequently that Local Sanitary Authorities, or their officers, are impelled to overlook cases of overcrowding, and fail to make closing orders in cases of houses unfit for habitation, simply because they know that they would be driving labour out of a district where, perhaps, it can very ill be spared.

It is possible that on the large agricultural estates the need for farm labourers' cottages is not very pressing, for it is recognised that cottages form a necessary part of the equipment of the holdings, but in the villages there is often a demand for houses, far exceeding the supply, on the part of postmen, shop assistants, carpenters, and others, who are not able to pay an economic rent and for whose adequate housing nobody seems to feel any responsibility. Again, the successful development of the Small Holding Movement in many places resolves itself into a question of cost of equipment. Given land worth thirty shillings per acre to an ordinary farmer, the rent to a small holder may easily have to be doubled by the time that house and buildings have been provided.

Obviously what is required is a construction more permanent than the "mud and stud" buildings of a century and more ago, and less costly than the bricks and mortar which succeeded them. The problem has been very prominently before the public of late, and the inquiry here reported was undertaken to find out to what extent Ferro or Re-inforced Concrete, now so extensively used in large constructional works, is being employed for farm and estate purposes; to investigate some of the systems of construction in use; to ascertain the cost of it comparative with other methods; and to consider the possibility of the profitable extension of its use.

As regards the first of these points, the results of the investigation seem to indicate that whilst the use of ferro-concrete is not confined to any particular localities, yet its employment for farm and estate building works is very far from being general or extensive. This is no more than might be expected, for this method of construction is still more or less in its

infancy, and the considerations affecting it are highly technical in character, involving, perhaps, a deeper knowledge of engineering work than can usually be required of those responsible for the Building Department on many properties.

As to the second point, two very successful methods of construction are here described in detail. The first is that practised on the Hardwick Grange Estate near Shrewsbury, the property of Frank Bibby, Esq. where a good deal of ferro-concrete construction has been carried out. By the courtesy of the agent, Mr. R. H. Simpson, and of the architect, Mr. T. Geldart, the writer was enabled to inspect the work under the guidance of Mr. Geldart himself.



FIG. 1.—Church Farm, Preston Gubbalds. South front of buildings.

The first visit was to Church Farm, Preston Gubbalds, occupied by Mr. R. Parker, where a complete set of model farm buildings have been erected (Fig. 1). The first glimpse of the buildings conveys the impression that they are composed of thin walls with strong piers at short intervals, and it is these piers, or columns, which are the essential feature of Mr. Geldart's system of construction. They are made in advance in the yard, or on the site, in wooden moulds which make six

at a time, and reference to the accompanying figures will make their construction and the method of re-inforcement plain (Figs. 2 and 3). The concrete both for them and for the walls is composed of granite chips, sand, and portland cement, in the proportion of 6 parts of chips and sand to 1 part of cement, but any good aggregate can be used in the place of the granite, which would be rather costly in many places.

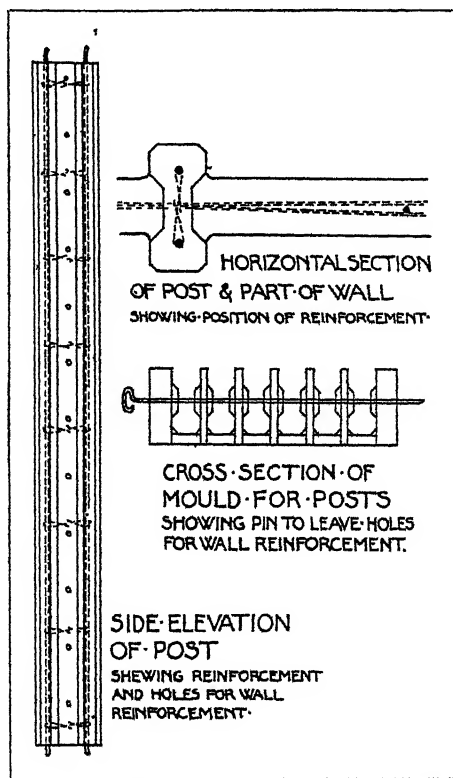


FIG. 2.—Details of columns.

The standard length for a column is about 10 ft., this being the most useful length, and a size easily handled without tackle. Lesser sizes are readily produced by blocking out the moulds to the extent required; they are about 9 in. by 4 in. in cross section, with the sides very much hollowed out to bond with the walls. The re-inforcement is $\frac{1}{2}$ in. and $\frac{3}{8}$ in. round steel rods, and Mr. Geldart considers that, both for efficiency and for economy, nothing better can be used either

for the posts or for the walls themselves. In the erection of the buildings the site is levelled, and the posts are set up along the lines of the walls, at about 8 ft. intervals, by bedding each of them to a depth of about 1 ft. 6 in. in concrete. The re-inforcement for the walls is then put into position, by threading $\frac{1}{2}$ in. steel wires through holes produced in the posts, for that purpose, during their manufacture, by placing cross-bars in the moulds. Vertical re-inforcement of $\frac{1}{2}$ in. steel wire is attached to the horizontal by means of thin binding wire, which fixes the re-inforcement so that it cannot be

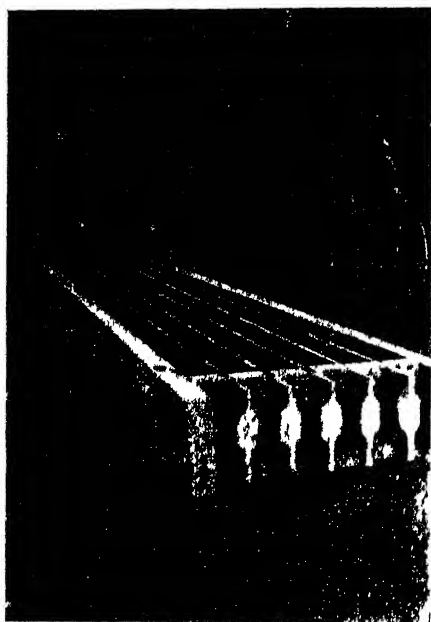


FIG. 3.—Mould for columns.

displaced when the concrete is filled in round it. Thus, at this stage the wall consists of a row of posts, each one joined to the next by a network of steel wires. The construction then proceeds by fixing wooden forms between the posts, one on each side, the posts providing attachment and being the vertical guides for the forms, which are made to give a uniform width, or wall-thickness, of 4 in. and the intervening space, with the re-inforcement in the middle, is filled up with concrete, no foundations being required (Fig. 4). The concrete is mixed fairly moist, and the forms build up, one over the other, as the work proceeds. In mild weather

usually two are filled in each day. Additional strength can be imparted to the piers at any point by setting up several columns together, and this is always necessary when they are to be carried up for another storey. In these cases piers composed of clusters of two, three, or even four columns are used; they are constructed of posts of varying lengths, so as to break joint, and extra re-inforcement is placed in the hollow spaces between them, which are then filled up with concrete. Provision must be made, particularly in a long wall, for expansion of the material, and this is done by inserting ruberoid, or felt, between coupled posts.

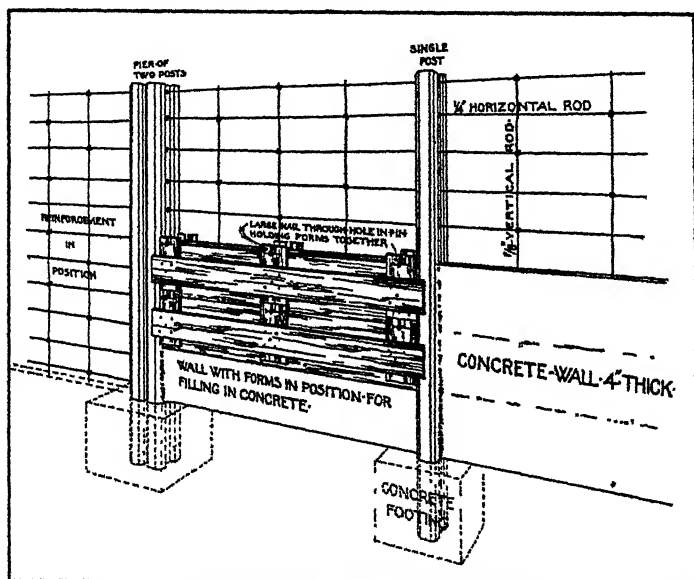


FIG. 4.—Showing construction of Wall.

The granary and other second storey buildings are carried on concrete beams, about 12 in. by 15 in., re-inforced with the necessary amount of $\frac{1}{2}$ in. steel bars. Across these beams are laid reinforced concrete floor joists. They are about 8 in. by 4 in. and are constructed in advance. They are rebated to a depth of 2 in. on each side of the upper surface, to form a bearing for the concrete paving slabs which constitute the flooring. These slabs are made 2 ft. square, and 2 in. deep, and are re-inforced with expanded metal. They are made either at the yard or on the site, in moulds, and when dropped into position in the rebates of the floor joists, they receive a grouting of cement and the floor is complete (Fig 5).

Almost the only timber used is in the roof, and all of it is coated with Carbolineum as a precaution against dry rot. The roof covering consists of the asbestos and cement "Eternit" tiles, which Mr. Geldart finds satisfactory in every way. Certainly they are light, cheap, easily laid, and apparently durable, but it must be admitted that their smoothness and extreme thinness combine to produce a roof upon which the eye does not rest with any considerable sense of pleasure.

All partitions, stall divisions, mangers, &c., are built of re-inforced concrete and form part of the structure, for, even

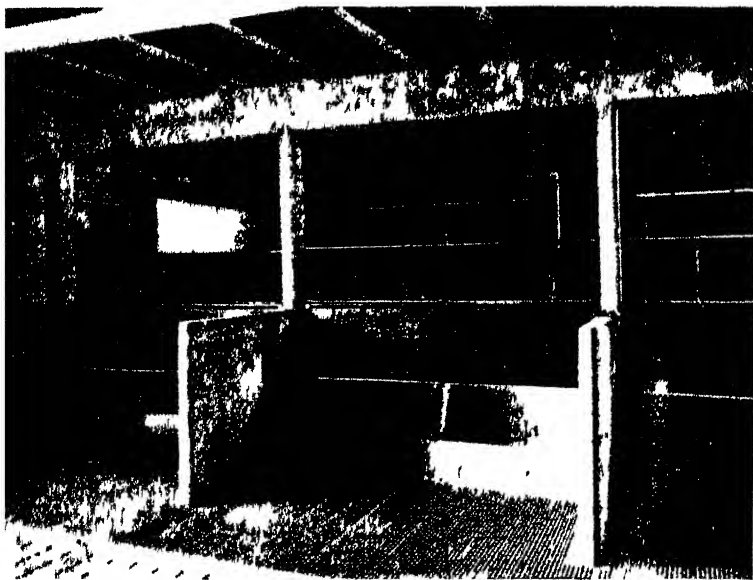


FIG. 5. Church Farm Preston Gubbalds. Small cowshed, showing concrete post floor over

where special provision is not made for these things when erecting the walls, the concrete is so easily cut or pierced whilst still "green" that junctions are readily effected. The floors are also of concrete, and as they are made up to all fittings with rounded angles there is no lodgment for rats, or other vermin, no corners that cannot easily be cleaned out and disinfected, and nothing in contact with the floors likely to decay. Mr. Geldart has several clever devices for making connections of all sorts, and for setting the various fittings of the buildings. For example, screws and bolts are provided for by wrapping wire round the threads and then putting the whole in the desired

position in the wall, or post, before the concrete is filled in. Afterwards they can readily be screwed in and out, the wire coils remaining set in the wall to take the threads. The rain-water from the roofs is run direct into concrete tanks, formed similarly to, and as part of the structure of the building. They are brushed over on the inside with cement and sand wash, and have proved perfectly watertight and satisfactory.

The next visit was to another farm in the neighbourhood where a large cowshed to accommodate sixty cows was seen, constructed on similar lines. Here, also, was a long length of wall, round the stackyard, constructed with single piers, with a weathered concrete rail on top, and 4 in. panels below it. Gate-posts were composed of a cluster of two, three, or four short piers, the spaces between them being crossed with re-inforcement and filled in with fine concrete. Some pigstyes in the course of construction were then examined, and this terminated a most interesting and instructive experience. The general impression created was that the work called for the exercise of the greatest skill and foresight on the part of the designer, whilst at the same time reducing the necessity for the employment of skilled labour to a minimum. Given an intelligent foreman, able to appreciate what is required and willing to carry out instructions, all the rest of the work can be performed by unskilled labour. It would have been interesting to have seen the same principles of construction applied to cottage building, but though Mr. Geldart expects to erect some at an early date, none have yet been put in hand. The plain concrete panels should lend themselves to novel and effective treatment in the matter of elevations.¹

In another part of the country a good deal of ferro-concrete construction has been carried out on somewhat similar lines by Mr. W. Hopkins, of Montpelier Works, Cheltenham. At Burderop Park, near Swindon, the property of Col. T. C. P. Calley, C.B., a large cowshed was inspected by the courtesy of the Agent, Mr. Ashford, and under his guidance, and a description of it will serve to explain Mr. Hopkins' system. The building accommodates about 100 cows, and externally it closely resembles the homestead near Shrewsbury described above. The walls are 4 in. thick throughout, with piers at intervals to support roof-principals, door-frames, &c. The re-inforcement is on identical lines, and the roof is covered with the same "Eternit" tiles.

All the concrete work is erected *in situ*. Mr. Hopkins has invented and patented a very simple system of forms which can be adapted for walls and piers of practically any size. A mould for a rectangular pier, or column (Fig. 6), consists of

¹ Mr. Geldart is about to publish full working details of his methods.

iron and two of wood, joined by iron pins. By means of two cams turned by a key the strap can tighten up all four sides. One strap is placed at the bottom of the upper mould, one at the top of the two-foot lengths. To build a column, the two long lengths are placed in position, as also are two short ones; the re-inforcements are then put in place, and the mould is filled with concrete, a little at a time, each filling being tamped by special rammers, one which is flat enough to pass between the re-inforcing bar and the mould, incidentally acting as a gauge at the same time. When the first or short length is full, the second is placed on it and also filled, and this process is repeated until the column is the required height.

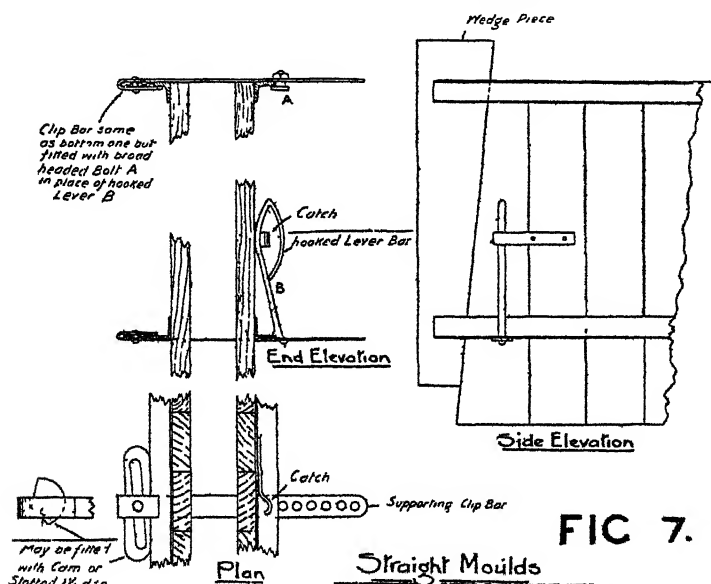


FIG 7.

The moulds for forming the panels or walls (Fig. 7) each consist of flat boards bound together by angle iron. These are used in pairs, and are separated and kept parallel by distance pieces, and held together by ties of flat iron. The chief distinction between these moulds and those used at Hardwicke is that the boards composing them are fixed vertically in the first case and horizontally in the second. Apparently the vertical method is preferable, as by it curved walls are made possible. The moulds may be any length up to 10 ft. long and 2 ft. deep, and they are strengthened with angle iron on the outside, both along the top and 6 in. from the bottom. The process of building a wall, with these moulds commences at a column.

Blocks, the required thickness of the wall, are placed on the ground, and each side of the mould is placed against them; ties of flat bar iron, one bent round as a hook, and the other end punched with holes, are passed through slots in the boards level with the bottom angle iron, and a pin is put in the most suitable hole, and a wedge driven in at the hook end against the angle iron. Distance pieces are dropped into place in the top of the mould, and iron ties, both ends hooked, are slipped over the angle iron and wedged up. The re-inforcement being in position, the mould can be filled in the way described for the columns. When the length of wall is completed the mould is placed on top of the previously made wall and grips it 6 in. deep, resting on the bottom ties, the distance blocks at the bottom being required no longer; but each course is now only 18 in. deep instead of 2 ft., as was the bottom one. As the wall increases in height, staging must be erected to work on, and in ordinary methods of erecting concrete structures scaffolding is employed. Mr. Hopkins' method is a very simple one, consisting of pairs of brackets bolted back to back on either side of the wall by means of a single bolt through the wall; it is then only necessary to lay planks on these to make a staging to work on. When a course is completed the brackets are moved upwards, the holes left in the wall being grouted up with cement.

It is important that the concrete should be mixed almost dry, and it is rammed into the moulds until it is thoroughly consolidated and quite hard. The forms are then removed immediately, and the surface of the concrete is rubbed down until it is smooth, thus obviating any rendering with cement. Great stress is laid on the ramming, in fact the concrete should be so hard when the forms are taken off that it can hardly be scratched by a knife. All superfluous moisture is squeezed out to the surface, and the rubbing-down process removes the marks of the boards entirely. As the piers, or columns, are moulded *in situ* there is no difficulty in providing for doors and windows. Bolts and eyes for hinges, &c., are put in as required while the concrete is still "green," and the heads and sills of windows are set in the walls as the latter are built up. As regards the roof construction, Mr. Hopkins employs concrete principals supported by the columns in the external walls, and by partition walls carried up at the apex of the roof. The principals are spaced about 10 ft. apart. Flat pieces of iron are set in their upper surfaces and support the purlins (Fig. 8); these carry the roof boarding to which the "Eternit" slates are nailed.

The details of the construction of this cowshed are as follows:—The foundations for the columns consist of blocks 2 ft. 6 in. square by 1 ft. deep, re-inforced by a network of bars

of 6 in. mesh, and a few diagonal bars to distribute the weight. The columns are re-inforced with four $\frac{1}{2}$ in. indented bars, tied at intervals of 12 in. by $\frac{3}{8}$ in. iron wire. The panels are $\frac{1}{4}$ in. thick, and have bars placed horizontally and vertically at 18 in. centres. The smaller roof principals are 14 in. by 7 in., and were formed on base boards 7 in. wide, by means of the wall moulds. The ends of the base boards had wood blocks bolted to them, cut diagonally to make fillets with the columns; the base boards were supported on poles, and these were left underneath until the concrete had set. The larger roof principals



FIG. 8.—Burderop Park Cowshed, showing roof-construction.

are 18 in. by 9 in., and 28 ft. span, and the whole calculated for a load on the roof of fifteen pounds per square foot (Figs. 8 and 9).

The aggregate for all this work was made from crushed colite and cement, in the ratio of six to one. For the stall-divisions and mangers, 3 in. thick granite chippings were used, and the ratio to the cement was three to one. The partitions (Fig. 10) are 1 in. thick and 5 ft. 6 in. high, and are re-inforced with six bars, one 18 in. from the ground, two at 3 ft., two at 4 ft. 3 in., and one at 5 ft. 3 in., the double bars being inserted at the point where a beast exerts its weight. The floor is also of concrete, and as the whole structure is jointless it is most

sanitary, and can be easily cleaned by simply washing down with water.

Circular tanks for water or liquid manure can be built up in a manner similar to the walls, the mould in this case being curved to the radius of the tank. A stout iron pole is firmly fixed in the centre of the tank, and from this are radius bars to the mould, which is thereby guided in a circle. As there is no column to start at, the mould is fitted with an end, and a piece of triangular timber inside



FIG 9.—Burderop Park. Cowshed, showing roof construction

this leaves a V groove down the end to form a lock when a complete circuit has been made. A V groove is also cut out on top of the wall round the circle, and in this is dropped the re-inforcing ring, after which grout is poured in to fill the groove. Succeeding rings of concrete are built up until the tank is the required height.

Almost any kind of re-inforced concrete structure can be erected on these methods, and it can readily be seen that the system requires the minimum of timber for moulding purposes, that little skilled labour is needed, and that the scaffolding is of the simplest. The practice of ramming the concrete in a semi-dry state assures the greatest density and cohesion of

the mass, and the type of re-inforcement used, namely bars, does not interfere in any way with its accomplishment. The wet system of mixing enables the concrete to be placed in position without ramming to any extent, but the exponents of the drier method claim that air spaces are liable to be left, and also that the surplus water must evaporate from the mass leaving voids, and possibly causing contraction, from which surface cracks may result. The excess of water may wash the cement coating off the stone chippings, and also the moulds must be left in position until the concrete has set; but in the semi-dry method the moulds can be removed before

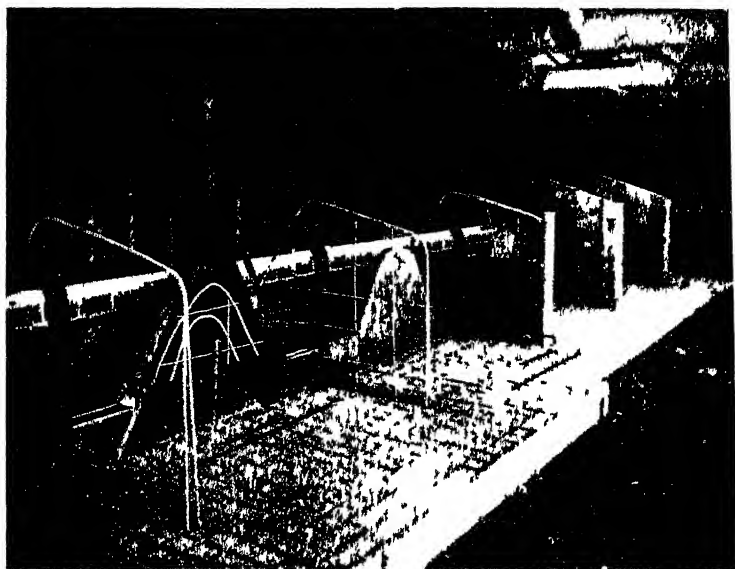


FIG. 10.—Burderop Park. Cow-stall divisions, &c.

setting, and the surface smoothed over so that no rendering, with its subsequent liability to scale, is required, and a good weatherproof surface is cheaply obtained.

Mr. Hopkins has not so far applied his method of construction to the erection of labourers' dwelling houses.

It is, perhaps, unnecessary to multiply examples of ferro-concrete construction for farm buildings, but to mention one more, differing slightly from either of the foregoing, Mr. R. Newton Jackson has erected a set of farm buildings at the Malthouse Farm, Skenfrith, South Wales, consisting of four

covered yards for cattle, stalls for tying up twelve cattle, four-stall stable, two loose boxes chaff-house, and cart shed, all of re-inforced concrete. The buildings are covered with a galvanised iron roof carried on iron girders. In this case the walls are composed of 7 in. concrete without piers.

Another system will be found described in the *Journal of the Land Agents' Society*, Vol. IX., page 58.

Leaving the question of buildings, re-inforced concrete is available in many other ways for farm and estate purposes. At Knowlmere Manor, near Clitheroe, two suspension bridges have been constructed by W. Peel, Esq., across the river Hodder, in connection with a public footpath. The width from bank to bank is about 57 ft., and in floodtime the river rises with extraordinary rapidity, so that a structure of exceptional strength is required.

Mr. Geldart has applied his methods to the erection of a water tower. It is 30 ft. high, and the tank at the top is constructed to hold about 4,000 gallons. Although simply constructed it has proved quite satisfactory.

There are many smaller uses to which this material can be put. Gate and fence posts, cisterns, drinking troughs and feeding troughs, steps and staircases, culverts and bridges; in these and in many other ways ferro-concrete may be employed on farm and estate, but as so much useful information on these matters can be got from the publications of the cement companies, they need no further notice here.

Those who inspected the exhibit (Stand No. 261) of the Associated Portland Cement Manufacturers (1900) Ltd. at the Norwich Royal Show, 1911, will have realised something of the possibilities of the material in many directions, and their book, *Every Day Uses of Portland Cement*, illustrates all that was demonstrated at the Show.

Coming to the question of cost, there seems to be no doubt but that the re-inforced concrete construction described above is more economical for building purposes than brickwork, without taking into account the possibility that it is also more enduring. Given proper supervision, unskilled labour can replace, to a large extent, the bricklayers, masons, carpenters, and other building tradesmen ordinarily employed. The 4 in. concrete walls represent an enormous saving in materials, haulage, and handling, over the 9 in. or 14 in. brickwork which they replace, whilst there is a further saving both of material and labour in the absence of footings and foundations. Concrete can be used where brickwork could not, and fittings are worked in with the structure which, if of iron, would be more costly, and if of wood, neither so sanitary nor so durable. Even at

Hardwicke, where the granite aggregate used cost some 12s. per ton, the homestead cubed out at a fraction over 2*d* per foot (not including the cost of forms), and it is obvious that the cost would be even less in places where gravel or other suitable aggregate could be obtained near the site. Buildings erected by Mr. Geldart for the complete equipment of a small holding cubed at a little less than 2½*d*., and on the whole, he finds that the saving is about 25 per cent. over brickwork.

At Burderop, the cost of a set of Mr. Hopkins' patent moulds sufficient for the work was 45*l*., and they were still good enough on the completion of the job for the construction of two other buildings of the same type, which reduces the cost, per set of buildings, to 15*l*. As the moulds are taken off directly the concrete has been rammed hard, the outlay on them is necessarily less than in a process where the concrete is used in a wet condition, and time has to be allowed for setting before the forms can be removed for use on the next stage. Mr. Hopkins gives the following figures of the actual net cost of a day's work by a gang of men engaged on the cowshed at Burderop:—

Materials and Labour.

1½ c. yds., say 30 cwt. aggregate, <i>plus</i> 25 per cent.	£	s.	d.
for shrinkage = 38 cwt. . . at 7s. per ton	0	13	3
6 cwt. Cement . . . at 30s. per ton	0	9	0
Steel Re-inforcement	0	6	4
Labour, including foreman	1	5	0
	<u>£2</u>	<u>13</u>	<u>7</u>

Work done.

9 lengths, each 9 ft. 2 in. × 1 ft. 6 in. × 4 in. thick of walling.

This is equivalent to 123 ft. 9 in. super of 4 in. work, or 1½ cubic yds., equal to 3½ cubic yds. of 9 in. brickwork. This at 23s. per yard amounts to 4*l*. 0s. 6*d*., so that there is a good margin to cover use of moulds, and to allow for extra cost in the construction of the columns.

At the present time Mr. Hopkins is engaged upon a contract for floors, mangers, stall divisions, and water supply for a large cowshed, and the cost is about 4*l*. 10s. per cow. Without the floor the remainder of the work would be 2*l*. 10s. per cow.

As regards the suspension bridges at Knowlmore, details of the cost are not available. All the work was, however, carried out by the estate labourers, aided only by the local blacksmith, and carpenter. No masons or bricklayers were employed.

By the courtesy of the Associated Portland Cement Manufacturers (1900) Ltd., the following figures are available

showing the cost of materials and labour in the actual erection of 436 yds. of wire fencing, using re-inforced concrete posts 12 ft. apart, and five wires :—

<i>Materials.</i>		£	s.	d.
103 Small Posts	@ 1/11	9	17	6
3 Straining Posts	@ 2/6	1	0	0
8 Struts	@ 1/11	0	15	4
8 Plates	@ 1/2	0	9	4
Loading and carting the above		0	11	5
3 Loads Ballast and carting	@ 2/4	0	7	0
14 cwt. Cement		0	17	6
4½ cwt. Wire, 6×7" ply galvanised strand	@ 16/6	3	14	3
Carting		0	2	3
Carting 3 barrels of Water		0	6	9
25 Eye Bolts with Eye Screws		0	18	8
30 Butterfly Ratchets	@ 7/6 per doz.	0	18	9
25 Eye Bolts and Nuts		0	18	0
<i>Labour</i>		5	2	11
		<hr/> <hr/>		
		£25	19	8

Cost per yard—1s. 2d.

Coming to the last point for consideration, the question of the extension of the use of re-inforced concrete, it seems probable that there must be a steady development in this method of construction in various directions. At the same time, the matter is one that calls for the exercise of much care and considerable caution where large constructional works are in contemplation. It must be remembered that the material has its detractors, and that cases are not unknown where ferro-concrete structures have collapsed without warning. It is a fact that the co-efficients of expansion of steel and of concrete are not absolutely identical, though they are so nearly the same as to make it improbable that the internal stresses from this cause would be sufficient to destroy the bond between the two materials. Nevertheless, where farm buildings are to be constructed on a scale sufficient to justify the expenditure on moulds and forms, the systems of ferro-concrete construction exemplified at Hardwicke, Burderop, and elsewhere would be well worthy of detailed consideration, for they have much in their favour from architectural, economical, and from sanitary standpoints.

As regards workmen's dwellings, to the construction of which ferro-concrete does not yet seem to have been applied, by-laws stipulating for 9 in. walls are a stumbling block in many districts, and, moreover, it is objected that thin-walled concrete cottages would be both cold and damp. Probably both these difficulties could be overcome, and the fire-resisting properties of the material are a very strong recommendation for it, not only for cottages, but

also for farm buildings. At Burderop, the cowshed described above replaced one composed very largely of timber, which was burnt to the ground, killing certain of the cows, which could not be got out in time. Some of the standings, mangers, &c., were of Mr. Hopkins' ferro-concrete construction, and these were absolutely unaffected by the fire: in fact, they were incorporated in the present structure on re-building.

For underground work this material is particularly well suited. The moisture in the soil brings about the maximum induration of the concrete, and the greater uniformity of the temperature must minimise the danger of cracking, due to expansion and contraction. For minor purposes, such as troughs, cisterns, and the like, there is much scope for development, for all these things can be turned out most successfully on the farm with a little gravel, some cement, and some fence wire, and they are practically everlasting. The same remark applies also to the fencing described above, but on most agricultural estates there is such a quantity of small timber, thinnings and tops, which can only be worked up into fencing, that an extensive use of concrete seems rather improbable. For gate-posts, large and small, a considerable economy may be effected by the substitution of ferro-concrete for oak.

The writer desires to record his obligation to the gentlemen named in this Report for their kindness in supplying the information from which it has been compiled. His thanks are also due to Mr. Alfred Brooks, of the Associated Portland Cement Manufacturers (1900) Ltd., and to Mr. C. Winckworth Allen, architect, for much assistance given throughout.

C. S. ORWIN.

Estate Office,
Panton, Wragby

ADDITIONAL CROPS FOR COWS AND SHEEP.

WHEN the question of additional crops for cows and sheep is considered, two points have to be kept in view—the cropping powers of the land available, and the possibilities of crops but little grown. The food supply for cows and sheep must necessarily be considered in conjunction with the total food available for the live stock on the farm, though emphasis may be laid on that more directly affecting them. One may elect to review the cropping in the past at any date; but possibly that of 1878 is the best and fairest to select, coming as it did before the years from 1879 onwards, when the climate and other agencies entirely dislocated British agriculture. In the Agricultural Returns there are some differences in the divisions under which croppings were classed then and now, but they mainly affect the comparatively minor crops. The figures show that in 1911 there were close upon 3,300,000 fewer acres under the plough in Great Britain than in 1878; also that there were 3,535,000 more acres under permanent grass. The land under corn cropping has fallen from 9,160,000 to 7,030,000 acres, which is very close to what it would be in natural course were the land all under the four-year rotation. Relatively, the decline from 4,570,000 acres under clovers and grasses under rotation cropping to 4,120,000 is not so great.

It is among the roots and fodder crops that the more notable variations are found, and it is around these that the chief interest in a paper under the above heading lies.

Before analysing these figures, it is well to have in review the head of stock kept in Great Britain in 1878 and in 1911. Having in view the area of land given up to the growth of food for live stock—and in spite of the extra quantity of feeding stuffs purchased and the larger area under grass—the number of animals kept on the land ought not to be regarded as unsatisfactory. It has to be remembered that by far the greater proportion of land which went from the plough was that which gave a poor return in arable cropping, and that it cannot be expected to produce pasture of first excellence—as a matter of fact it does not; it includes that which “tumbled down” to pasture, and is yet thin, having a small stock-carrying capacity. In 1878 there were 5,738,000 cattle; in 1911, 7,114,000. Sheep, in 1878, were 28,406,000; in 1911, 26,494,000 (after the rapid decline in the price of mutton three years ago). Pigs, in 1878, 2,483,000; and in 1911, 2,822,000. Agricultural horses, in 1878, 1,412,000; in 1911, 1,480,000. It

is obvious that altogether more food is required now, and the relative areas for obtaining this are: roots and other such fodder crops in 1911 equal 2,124,000 acres against 2,559,000 in 1878, or a decrease of 435,000 acres; whilst vetches, lucerne, and other crops which may be regarded as the source of additional food in summer (as opposed to roots for winter) were 420,000 acres in 1878 against 163,000 in 1911, or a loss of 257,000 acres. It is not altogether surprising that in June, at which time the crop census is taken, such a falling off should be shown in this class of cropping, because the additional land gone to pasture would find food then; but when one considers the extra quantity of food required by the increased demand of the animals that now have to be wintered (the increase of cattle, if less in numbers than the decrease in sheep, calls for more food), one cannot but be impressed by the fact that the food is found in spite of a greatly diminished root area, and also with a vastly smaller straw area. It is true there is the produce from the bigger area gone to grass, but this is to some extent nullified by the loss of the straw and pulse haulm from the further two million acres which were available in 1878.

The Agricultural Returns form the only basis on which one can estimate cropping possibilities, and when, as in this article, one considers the additional crops available as food supply to cows and sheep, one is obliged to use them for the purpose. They, however, doubtless fail to indicate what food is raised from the catch crops sown after June and consumed before the corresponding date in the following year. There is no doubt that the rigid rotations insisted upon in 1878 over a large portion of the country have since then been in the main set aside, and that as a consequence catch cropping has considerably increased. A catch crop census would be difficult to carry out satisfactorily because much autumn-sown catch cropping is consumed in autumn, and some catch cropping is sown in spring and fed off before June. For practical purposes, however, an early November census would supply most of the necessary information. It is, however, quite certain that the Returns do not indicate at all fully the changes which have taken place since so many restrictions in respect to cropping have been removed. Vetches or tares have for generations been very much a sheet anchor in catch cropping, and the Returns show that they have greatly decreased, which is surely misleading as to the extent to which catch cropping is carried out; though the Return of the area under main-crop tares is probably correct, because the greater area of land under grass supplies an increased quantity of food at the time when this crop becomes available. The catch cropping carried out is evidently

chiefly for autumn, winter, and early spring feeding ; if this were not so, it is impracticable to account for the possibility of now carrying a heavier head of stock through winter on 400,000 fewer acres of root crops than were grown thirty years before. It must, however, be remembered that a really long and severe winter has not been experienced since the first months of 1895, and that very few roots have been frosted and ruined during these milder winters—a condition rarely experienced in this climate.

Additional food for cows and sheep can certainly be found by increasing the root area. It may be accepted that the land will carry a root crop once in four years with reasonable safety without becoming "root-sick." The area under the plough at the present time, and the acreage of roots grown, as indicated in the Returns, show that on an average the land comes under roots but once in seven years. On chalk soils root or allied crops are taken more often than once in four years, but against this some of the heavy clays comparatively rarely carry roots. In dealing with the area at present under roots, as we have seen, the catch crops sown in autumn are not calculated, and these have a bearing on the question of root-sickness, but they are not as a rule very exhaustive in comparison with a crop which holds the land from May through autumn and winter. Difficulties of working heavy land for roots, and of feeding off these crops in wet winters, make such land unpopular for root growing. By altering the method of farm management, however, far more root growing may be successfully carried out on heavy land. One often hears it said, "I should like to see the man who could grow roots on land like mine." Very often one could point out those who are successfully growing "roots" on land which presents greater difficulties than that to which the speaker refers ; but that they do not always follow exactly the lines which are found successful on more friable land.

Before dealing specifically with crops which are available under ordinary conditions, it is well to consider what part the root crop plays in the food problem on the farm. One does not confine "roots" to those plants which are mainly grown for their fleshy or bulbous part, but includes those which, like rape, cabbage, kales, &c., require somewhat similar cultivation, occupy much the same place in a rotation, and supply food closely equivalent to the true "roots." One speaks of the root crop as including "roots" or "roots and the like." Clovers and rotation grasses occupy far more than one-fourth of the land under the plough, so that with the larger area under permanent grass in recent years there seems no particular reason why the quantity should be further increased.

Such crops, together with permanent grass, practically always secure ample food for stock from the middle of May to the middle of July, while roots, hay, and straw in ordinary seasons supply the food needed through the long wintering entailed by the British climate. Additional foods, however, are needed as an insurance against a short supply during abnormal seasons; and a man who carries a big head of stock without such an insurance takes risks from which he may at some time or another suffer heavily. These risks may result in difficulties giving rise to shortness of keep for a longer or shorter time. The special periods of short food against which the stock-keeper has to guard are the later spring months between roots and grass; the late summer resulting from a June and July drought; and the autumn as a result of a late summer drought which has stopped grasses and bulbing roots from growing. In this last case the roots are not fit for stock, and if fed in a small and immature condition would imperil the winter supply and accentuate the difficulties between roots and grass.

The farmer ordinarily sets out a scheme of cropping which, if conditions are favourable, will provide what he needs for his stock; but such a scheme can seldom be carried out without change. This cropping is his first line of defence, but unfavourable weather may drive him back from it on to another line which he may have arranged, and even this again he may be unable to maintain. Very few after the late prolonged drought could have had much of their original schemes left. Fortunately droughts are rarely so prolonged as this one was, and the farmer has as a rule the means of redeeming his position; though the severe pinch felt from time to time shows that he does not always take the opportunity.

The spring shortage generally comes from a poor root crop, and relief has to be looked for from catch crops—those available as food in autumn* to save too early an attack on the root crop, and those which come when the root crop runs short. But as will probably, unfortunately, be found next spring, the catch crops do not wholly meet the case; therefore, those who will suffer least are those who secured a plant of mangolds before the drought's influence was great; also those who had put in a considerable area of cabbages and kale early. Cabbages transplanted in the previous autumn or before the drought started, where the land was kept well stirred, suffered little from the summer drought. As is generally the case, cabbages, kale, and kohlrabi are suitable for March and April drilling, and if hoed out will always make good growth. When out of 2,000,000 acres under roots in this country only 65,000 of cabbages and kales (some part of which will go to culinary use), and 13,000 of kohlrabi, are grown, it is quite certain

that stock-keepers are not doing what they might by way of insurance against loss by drought. These crops are especially valuable as cow or sheep food : moreover there is not one objection which can be lodged against them as foods, whilst their cropping powers are good and their cultivation simple. Any one looking for additional crops for cows or sheep should certainly give attention to these. Cabbages meet the summer and autumn droughts, and kohl rabi does not mildew nor does it so readily take finger-and-toe and other diseases so frequent with turnips and swedes. Kale sown early gives enormous bulk in the following year, just before grass is available.

It is very satisfactory to see that although swedes and turnips have lessened their area by about half a million acres, yet mangolds have increased by 100,000 acres since 1878. After the success of mangolds this year they are likely to continue to increase, and it is well that they should do so. They are essentially the "between swedes and grass" root, and are the best insurance against loss through shortness of food at that critical period. Of all the features shown by the Returns, the increase in the area of mangolds is the most satisfactory. The head of stock in the country warrants a decidedly greater increase. The most unsatisfactory feature is the trifling area given to cabbages and kohl rabi.

In 1878 there was no separate division for rape in the Returns, so it cannot be said what changes there have been. The crop is grown to the extent of 78,000 acres, and on chalk soils where there is a rapid succession of crops without any very strict regard to their rotation, it is relied upon by flock-masters to find food at certain periods of the year. Like the swede or turnip, the greater portion of the crop is sown in hot weather, and it has similar trouble in becoming established and out of danger of the "fly"; but its woody root holds the ground better than fleshy-rooted plants during drought. Its habit enabling it to be fed off more than once adds to its value and popularity. Sown at Easter time in favourable seasons this crop may be fit to feed off in August, possibly again later, and again in the spring; but on the whole it is not one of the best stop gaps during the ordinary drought periods, although sometimes it is most effective in this respect when food runs short in early autumn. It is met with incidentally on all soils over a large portion of the country as a catch crop sown after a bastard fallow, but on the easily worked chalk soils in far greater quantity than elsewhere. On stronger soils other crops as a rule repay the cost of growing better where they take a full place in rotation, and but a small area of rape is grown on such land. Cole seed or giant rape is met with on rich soils such as the Fens and on good loams, where it grows enormous crops

when sown in July on land that has been fallowed, providing excellent food for sheep in the early autumn. Owing to the great bulk of food rapidly grown, it is well suited for sowing when the outlook indicates a shortness of sheep food before other root crops will be available.

We have said that the area under vetches or tares has fallen much, and this is in accordance with what might be expected when so much extra land has gone to the grass. But beyond what is necessary for the supply of the stock in normal seasons, there is the question of insurance in case of drought. The value of tares during the drought last summer was simply inestimable, and that is the experience in all summers when drought sets in early. Although the 110,000 acres grown probably meet actual requirements in ordinary seasons, it is a mistake to be niggardly in their growth. They are one of the crops which are good as insurance against the worst effects of drought; whilst in years of plenty they always give a value that well covers the cost of production. They are a good food alike to cows and sheep. They may be soiled to the former and folded over by the latter, making a good change food. Personally I regard cabbages and tares as the two great reserves against summer and early autumn drought, and it is in every way consistent with good farming to grow them freely. Both are but little affected by drought, as they get well rooted before the hot weather; each gives food of high feeding value as well as of considerable bulk; each enriches the land where fed back on to it; tares in particular through their roots bring nitrogenous matter to the soil. Both can be fed not merely when matured, as is the case with swedes, but whenever there is bulk, and both are liked by all animals. The cost of cultivation of tares is less than that of any other crop giving a substantial return, with the possible exception of crimson clover, and by varying the period of sowing, they can be grown so as to be available throughout the summer. If not greatly needed in a "growthy" summer, they set free grass and other crops and yet will leave the land clear to be bastard fallowed before it is required for wheat. To cow-keepers tares have a special value, as they give bulky succulent food when the grasses are losing their milk-making qualities.

Under the great freedom of cropping allowed now, it is quite easy to arrange the cropping to admit a greatly extended area under tares without throwing the horse labour on the farm out of balance. There can be little doubt that the extension of catch cropping (though the Returns do not show this) is responsible for the lessening of the area under dead fallow, and for the extension of bastard fallowing to the marked advantage of the farm. On much heavy land this is accomplished, though there are districts where the dead fallow is still a fetish. Heavy

land being generally largely in grass, the small proportion of arable carrying few roots, the danger of relying solely on the former is very great, exposing one to bad losses whenever there is a severe summer drought. Land may become so foul, or after a series of wet years may so need a roasting in the clod, that a prolonged fallow is desirable. But there is no need for this to be done in accordance with any definite rotation. Some have proved by experience that there is no valid reason why much of the land that is now dead fallowed should not carry one early summer crop, and yet get nearly all the advantage of the hottest months under bastard fallowing. Just as a country which depends upon root crops which are sown at the most difficult time to establish them, and which does not make use of crops which can be established at other seasons, must from time to time meet with disasters to its live stock through insufficient food, so a country given up to dead fallows must always be at a disadvantage in stock-keeping.

The cultivation of the crops already mentioned is well known to all, therefore it is not necessary to enter into details in respect to it. What is of more importance is for each one to meet the difficulties of his own situation. We must here content ourselves with the broad advocacy of systems or rotations which include these crops. There are, however, among some of the less frequently sown crops some which may be advantageously grown. Lucerne has altogether a not insignificant area devoted to it (there being 53,000 acres), but in view of the fact that there are 4,100,000 acres under clovers and rotation grasses it is very remarkable that so small an area is devoted to lucerne or alfalfa. This is more especially so as it grows well in districts where the weather enforces short leys and makes it difficult to get a plant of seeds to establish itself each year. It is a striking fact that more than half the area is grown in the three English counties, Essex, Kent, and Suffolk, whilst Scotland accounts for less than a hundred acres, and Wales for less than four hundred. Lucerne has been grown in England for centuries, and it has been known and grown in Southern Europe for thousands of years. It gives the Argentine a position unequalled for stock raising, several millions of acres in that country being devoted to it. France grows over 2½ million acres; and when it is suggested that our climate is colder than those mentioned, one can point to the fact that it is grown successfully in the cold Canadian climate. Writers from the time it was first grown in England have urged its value, and no one has been able to point out anything which detracts from its usefulness, whilst those who grow it regard it with pride and express their satisfaction with it, and it is emphatically an insurance crop against summer droughts. It

is too often accepted that as it prospers on light soils it is not suitable to the heavier ones ; but provided there is a depth of subsoil, and the land is not waterlogged, it does well. In trials I made on a piece of ground specially selected for its wetness, on a stiff loam overlying Wealden Clay, it prospered and held for several years, never failing to crop well. Preferably, however, too wet land should be avoided, if for no other reason than that such ground is difficult to work and clean in wet springs. To the cow-keeper lucerne is particularly valuable, and though it is not advisable to feed it too hard with sheep, it is common practice to give sheep a run over the last crop in the year. It also makes a good "flusher" for ewes before taking the ram. It is possibly not so popular in the great sheep-breeding districts on the chalks, because it is better suited to soiling than to hard feeding by sheep ; for though sheep thrive well on it the plant will not hold if closely fed.

The seeding offers no special difficulties beyond those met with in laying down other seeds, and it may be sown, as it most often is, in a spring-sown corn crop or on bare land. It pays to drill it because the hoe or horse-hoe can then be used in the following spring to get rid of weeds ; although it is, however, sometimes sown successfully broadcast. A fine seed bed allowing the seed to be deposited within an inch of the surface promotes germination, and from 25 to 30 lb. per acre of seed suffices, with drill rows from 9 to 12 in. apart. April is the ordinary month of sowing, but lucerne may be sown up to June. As it does not crop to the full in a year after planting, it is not unusual to sow some other crop with it, such as trefoil or Italian rye-grass, which will die out by the time the lucerne comes to full growth in its third year. Occasionally more permanent grasses are sown with it, but as a rule it may be regarded as best to aim at getting a whole lucerne crop. This crop gives out more often from smothering by surface plants than from any other cause, therefore a clean seed bed is preferable. Owing to the quickness with which a fresh growth follows a cutting, and because small patches are generally cut daily for soiling, so preventing horse work on the land, most of the cleaning has to be done just before the spring growth starts. Once the plant is well established the cleaning work need not be too gently done, and all the surface should be worked. Lucerne searches deep for food, consequently it thrives where more shallow rooting plants would not do well over a prolonged period. Three cwt. of superphosphate of lime and 2 cwt. of kanit on light land, or 5 cwt. of basic slag on heavier land in place of the superphosphate, are repaid in the cropping ; subsequently an

annual dressing of farmyard manure free from grass seeds greatly benefits the crop. The great growths, often amounting to 20 tons of green-stuff in a year, are doubtless largely due to the fact that, like other legumes, lucerne can utilise the free nitrogen of the air, and that its deep roots collect other plant food from such a depth of subsoil. In spite of the heavy cropping over a long series of years—I have seen crops in full vigour on light loams in Norfolk after thirty years, and after twenty years on the Cambridgeshire Fens—the land is left in good heart when broken up, as the stump contains much manurial matter. As a rule when the plant weakens it is advisable to sow fresh fields.

Sainfoin, or Saint Foin, is a crop which might be more extensively grown, as it is such an excellent food for sheep both when green and as hay; it is also well suited for soiling to cows. It grows well on calcareous soils, and the crop is pretty much confined to these and a few other light soils. That it is well suited to heavier soils was clearly demonstrated by the fact that when miles of poor and run-out heavy clay land in North Bedfordshire went out of cultivation in the wet years about 1879, and tenants could not be obtained at five shillings per acre, the owners worked it at good profit by growing sainfoin and selling the hay. I saw many crops which stood five or seven years, and were then as good as any I ever saw in Wilts. or Hants. Not only is the soil heavy and wet there, but according to meteorological observations there is nothing colder in Great Britain, the district having a January mean average of 31° F.: it has, however, a correspondingly hot summer record. The range of soil suitable to sainfoin is evidently wider than is commonly accepted. Its value compared with that of rotation grasses (under which it is included in the Returns) lies in the lengthened period it will remain profitable, the limit of which is, with few exceptions, seven years. Owing to its popularity where it is grown extensively, land is often too tired of sainfoin to grow it for longer than four or five years, one seeding in twenty-five years or so being as much as most land will stand if it is to remain productive for the full seven years. There is a variety known as Giant Sainfoin which comes quickly to maturity, grows very heavy crops, but is not profitable for more than two years. The seed is sown in the husk or milled (husked), and the quantity per acre is 50 lb. milled seed or 4 bushels of the other, where it is sown without other mixture than trefoil, which is occasionally employed as a nurse during the first year. It is, however, sometimes sown with other rotation grasses. It is customary to drill it in a cereal crop in rows 9 to 12 in. apart in March and April. The seed may be put in to an inch

in depth. In the following summer the first crop should be mown, as it is unwise to run sheep on it too hard at first. In subsequent springs it should be well harrowed to destroy weeds. Heavy cuttings for soiling cows can be taken during the summer, especially if the crop is not allowed to become too mature, that is to say cut not later than when the flower shows.

Lupines are not deserving of special attention under the heading of this paper, for though they may be cultivated with considerable advantage, especially in regard to their powers of obtaining nitrogen from the air, other crops can, as a rule, be grown with better results. However, the blue lupine proves useful as a sheep food on some light sandy soils which will not carry clovers often.

Italian rye-grass holds a strong position amongst those grasses commonly employed to produce temporary pastures, and in the shorter leys it is undoubtedly the most valuable and the most popular. Its value being so well recognised in this respect, and although it is not intended to discuss all the plants grown in temporary pastures, it may be well to discuss its suitability to special conditions. Its great assets are heavy yield, rapid growth, suitability to most soils, frost resistance and early spring growth, high feeding value, cheapness of the seed, and exceptional value under irrigation; it grows well in association with the bigger clovers, and thus helps to heavy crops of mixture hay, and it can be grown as a catch crop in cases of emergency. It can be sown at any time between February and October, inclusive, with all reasonable expectation of success; therefore, it is peculiarly adapted to be used at any period when irregular cropping, such as the most varied forms of catch cropping, set the land free. Even on very light soils in the driest climates, where it is least suited to rotation growth, it is valuable as a "single cut" crop, providing an early light run for lambs, and as a subsequent crop, allowing the land to be bastard fallowed, or if clean to be put into roots. In districts where catch cropping is not ordinarily so convenient as, for instance, on the chalks, but where it is desired to have the lambs fall early, Italian rye-grass alone, or with trefoil, is often taken and treated in this way. In like manner the crop provides early keep for cows; though where it is required for cows, crimson clover (*trifolium*) is more often preferred, as giving greater bulk. This is convenient because Italian rye-grass is well suited to mend or replace spring-sown "seeds" which have failed in summer droughts; though land which has had an early bastard fallowing, or has carried a crop which has been taken off the land early, can be put to this form of cropping. Not only does Italian rye-grass grow

successfully after corn when sown in early autumn, but it may be sown with white turnips in the late summer, in which case the turnips may be fed off lightly in autumn, and the rye-grass will be available in spring. This practice is more suitable on light land than on heavy, as the latter is more liable to poach in a wet autumn. When sown on clean land in early summer a good feed may be obtained in autumn and another in the spring. No crop grows so much valuable food under irrigation, and on sewage farms it has always been one of the most profitable crops.

From time to time the value of gorse as a crop for producing food for cows comes under strong advocacy, but generally the question flickers out in most districts until another strong advocate appears. The trouble of cutting and then crushing or chopping seems to be a hindrance which tends to its unpopularity. In some districts where its cultivation has been practised for generations, and where other food is difficult to obtain, it is accepted that it will be grown, and the work entailed is taken as a matter of course. Gorse is sometimes drilled in a cereal crop, or by itself, and the land should then be quite clean. The seed, 8 to 10 lb. per acre, is drilled in rows 18 to 24 inches apart, to the depth of an inch. In the first year it is kept clean by hoeing, which cannot be done if it is sown broadcast as is occasionally done. In the autumn of the second year the first crop may be taken, by mowing. In subsequent years the crop is cut by a hook or scythe. The cut crop is put through a crusher or masticator, reducing it to a moss-like condition easily digested. A feature in favour of gorse as a food is that it supplies a relatively succulent food from November until May.

In spite of a strong campaign some years ago to induce farmers to take advantage of prickly comfrey as succulent food, it is now but little grown. There is no doubt that an exceptional yield of green food, which animals can be induced to eat after some encouragement, can be grown. When well established as many as three or four cuttings, each of 5 or 10 tons, can be taken from an acre. Its cultivation is very simple, as it can be grown from seeds or roots, the latter being the most common; the sets broken from the roots are placed on cultivated ground in rows 2 ft. apart and 18 in. apart in the rows. Its many disadvantages, however, seem to have worn down the endurance of its greatest enthusiasts, for in many a weedy corner occasional plants show that it has been under cultivation there and then abandoned.

Two valuable crops, however, remain—maize and helianti; the first proved by many years' experience and the latter still but little known or grown.

The recent long and hot summer, with the excellent yields which such a season produces, have brought maize into prominence as a fodder crop; and so far as varieties imported into this country have shown, it is only as a fodder crop that it has value here, for though cobs ripened in 1868, 1887, and other hot years, ripening is too uncertain to warrant its being grown to produce corn. As a fodder crop it is, however, highly valuable, and there is good reason to believe that its growth will be considerably extended for this purpose. About thirty years ago the Royal Agricultural Society made experiments with varieties likely to prove most useful for fodder purposes, having them grown in several districts; one set coming into my hands when in charge of the Woburn Experimental Farm. The results in all instances were not satisfactory, as the trials happened to take place in the cold wet sunless years of the early eighties. But gradually the area has extended, and particularly in the east and south-east counties there are many who never fail to put some land under maize. This plant stands out prominently as an insurance crop against short food supply from drought; the weight produced is extraordinary, the feeding value great, and it prospers in years when roots are imperilled. It is by no means a difficult crop to grow, and should all the yield not be required green, it can be chaffed and converted into excellent silage. It is especially valuable for cow food, as it becomes fit for cutting in August when such keep is often poor as well as scarce, and it can be used until cut back by frost. A yield of 20 to 30 tons per acre of food richer than mangolds or swedes may be obtained under good management and favourable conditions, and 15 tons upwards are good ordinary crops, so that there can be no doubt as to its value. The White Horse-tooth type of maize and the Giant Caragua are mainly relied upon for seeding in England, and experience has shown that it is a mistake to plant any maize corn that may come to hand. A germination capacity of 85 per cent. should be insisted upon, and there are several seedsmen who import maize specially for seed; ordinary corn is apt to "heat" in the hold of the ship and so lose its vitality. On all but cold wet soils maize does well; and even on these with good tillage it can be made to produce much valuable food. As the land has to supply so much, good, deep, well-drained, medium loams are best adapted to the crop, and those climates with the best summer sunshine records are most suitable. Excellent crops, however, are grown on the light sands in Suffolk and other counties. As a matter of fact there need be little hesitation in growing maize where other farm crops do well. It is important not to sow before risk of frost has passed and the soil has

become thoroughly warm, and according to the situation that will be from the end of May to the middle of June. Thoroughly cleaned, well-manured land should be chosen, and a deep friable seed bed be secured. A customary dressing is 10 to 12 tons of farmyard manure with 3 or 4 cwt. of superphosphate, and a top dressing of 1 cwt. to 1½ cwt. of nitrate of soda; but of course, as for all crops, the condition of the land regulates the quantity needed. It is a common practice in some districts to put maize on the sites of mangold heaps, potato clamps, and other odd places which leave a rich soil behind them, and nowhere is it likely to do better. From 1½ to 2½ bushels of seed, according to size, are needed per acre, and this is sown by several different methods; the rows should be from 18 to 24 in. apart, and the latter is rarely too wide. The seed may be dibbled in in holes about 8 in. apart; may be ploughed in, the seed being dropped from a drill carried on the beam, as sometimes practised for bean drilling, or it may be drilled with an ordinary corn drill. When planting light land I have put in a good many acres with the ordinary drill quite satisfactorily; but if the land is not well prepared and the coulters will not deposit fully 3 in. deep, some other method should be adopted, or in dry weather germination will be slow, and rooks, pheasants, and other birds which begin to feed early at maize sowing time will cause much trouble. It is absolutely necessary to keep birds from the crop until it is well above ground. The land must be kept clean from weeds until the growth of the crop smothers them. When it can be left until it is fit to cut, cutting is generally done with a swop or fagging hook; and the most customary method of giving it to cows is to throw it out on pastures; it is sometimes, however, coarsely chaffed and fed in the manger at milking time.

Helianti, a tuberous plant of the sunflower order, has recently been introduced, and from results obtained in the recent hot summer is likely to prove very valuable to stock-keepers. My first personal experience of it was in 1910, when I grew half an acre, leaving the crop to mature; it produced a big growth of foliage and a heavy crop of tubers; but in casual attempts to feed it to animals the results were not sufficiently attractive to make me appreciate it highly. I gave a considerable quantity of the tubers to pigs, and should have grown no more except that in an out of the way corner of a field where floods very often destroy crops, I decided to plant half an acre for pheasant cover, and if possible to use the produce; this was so much an afterthought that the sets were not planted until June, and they were then in a very withered condition. Growth was extremely rapid in spite of the hot weather, and a good crop resulted. Part of this has been fed to cows, part to

sheep, and some remains to give sets for further planting. It appears that if the stems are allowed to get big and old, animals will only pick off and eat the leaves and the younger shoots; when chopped, however, animals took all greedily, and it has proved itself an excellent cow feed. Inquiries made have proved that it has done well under many conditions, and it is evident that there is yet much to be learned as to the best method of consuming the crop. Among reports come to hand, showing in what various ways the crop has been treated, Mr. Scambler, of Swavesey, Cambs., has stated that his plot was invaluable to him last summer; he fed his young calves on it green, going over the ground three times, mowing it low down, and getting bulk exceeding that from lucerne or any other crop two or three times over. The calves were fond of it, and thrived well. Mr. J. Mawby, in the Spalding district of Lincolnshire, cut his with a scythe six times during the summer, the first cutting being before any other fodder plant was ready. He fed his mainly to horses. Mr. Overman, in Norfolk, fed his with sheep, which took to it readily and did well on it. Experience has shown that when mown with the intention of taking subsequent cuttings it is wiser not to cut below 10 in. from the ground, as it then shoots more freely than when mown very close. The instances given show that all kinds of stock feed it readily when properly presented to them, and they do well on it, as is natural with a plant that has such a high feeding value. Analyses show that it is singularly rich in sugar and other food constituents. No one who had masticated a portion of the stem could doubt the presence of a large quantity of sugar. The cultivation of the crop is singularly simple; in the two years I have grown it it has been ploughed in in rows 2 ft. 6 in. apart, and sets a foot apart in the rows; in fact it can be planted just in the same way as potatoes, and may be manured similarly. The crop grows to a height of 6 to 10 ft. or more, and has a branching habit with broad leaves, so that when well manured the mass of growth is enormous, and it is not necessary to plant the sets nearer than has been indicated. The planting season ordinarily runs from December to April. Growth is so rapid when once started that weeds get no chance, but hoeing or horse-hoeing or harrowing can be done with advantage until growth shows. Where tubers are required the whole growth should be allowed to die back in the autumn, and the tubers can be lifted any time during the winter and even up to April. In the second year the portions of tubers and rootlets left in the soil will be sufficient to produce a dense growth covering all the ground, and the crop can be taken off as desired. By this means the plant will hold the ground for several years.

Helianti is certainly a crop which proves itself valuable in times of drought, and is well suited to ensure food throughout critical times. In this climate it is doubtful if it can be relied upon to make hay, though when made it is well liked by animals; the crop can, however, be made into good ensilage after being chaffed or chopped.

Mention has not been made of plants such as *Sorghum saccharatum*, millet, and others which were strongly advocated rather more than twenty years ago, for although they doubtless possess valuable features, at any rate the varieties which reached this country did not prove sufficiently valuable to encourage farmers to continue to grow them. However, with the above-mentioned opportunities to develop the crops grown already on an extensive scale, and the possibilities which some of those less frequently cultivated reveal, there is little need to be anxious as to the food supply even at the periods of the year when drought or frost have hitherto caused trouble and loss.

W. J. MALDEN.

Etchingham.

RURAL EDUCATION IN OUR VILLAGE SCHOOLS.

THAT children in our country villages should be obliged to go to school is part and parcel of the compulsory education system which this country, like most civilised nations, deems it necessary to enforce for the welfare of the State. Another circumstance of rural life, as certain as the first, has been a great movement of depopulation continuously going on. This movement, if not as active as it was some short time back, is at any rate not at the present moment reversed.

A third circumstance we may note concerning the rustic population, and that is a very general belief held by those in a position to judge—to wit, the employers—that the younger farm hands are not such skilful craftsmen as their fathers. In fact, it is only too often the case nowadays to find that many of those operations, so common in farm work, that require a skilful combination of brain and hand, are performed best by the grandfathers of young men already at work on the farm after the close of their period of compulsory schooling. It would, perhaps, be no great exaggeration to say that it is easy to find villages in England where not only the best, but the only skilful exponents of such crafts as say draining, layering, thatching, stack-building, &c., are the venerable grandparents we have referred to.

It would be impossible for any one to say exactly how much the third circumstance noted, namely, want of skilled craftsmanship, is due to the second, that is, to rural depopulation. This cannot, however, be the sole cause if, as is confidently averred by the employers, the very young men, of whom a certain though very reduced number remain on the land, are, making all due allowance for their want of experience, less skilful than their fathers, and still less so than their grandfathers.

Any one with an extensive and intimate acquaintance with farmers, must necessarily have often heard opinions expressed which imply a belief that rural depopulation has some connection with compulsory schooling. The more large-minded of the complainants averring that, while the whole of the conditions of country life existing during the last thirty years necessarily led to a certain amount of emigration from the country to the towns, the exodus had been greatly increased owing to the education given in the elementary schools. With regard to the question of skill in farm handicraft or the cultivation of intelligence among those working the land, opinions are no more favourable in upholding the value, from the farmer's point of view, of schooling than they are to its efficiency in checking rural depopulation. Some of our practical agriculturists hold that the "atmosphere" of the schoolrooms rather stimulates a desire on the part of our country lads, to become messenger-boys, shop assistants, or junior clerks, and that the training they there receive is much more likely to make them successful in such avocations than to help them on to become good cowmen, waggoners, shepherds, or "skilled" labourers.

No one, we venture to assume, will deny that these complaints have some justification. Compared with the life of husbandry itself, that of compulsory education is still in its first infancy. If, however, after allowing for the imperfections of the period of transition which must always occur at the start of any great national movement, it is found that the complaints mentioned above are generally well founded, then the public in general, and the farmer in particular, have grave cause for complaint. The public, although it may believe it necessary to uphold an economic system unfavourable to the existence of the largest possible agricultural population, has nevertheless a right to complain if the education given in the village schools tends to still further reduce the number of those who find a home and reproduce themselves on the land. For obvious reasons such members of the community are a most valuable national asset, to say nothing of the fact that it is only too probable that a reduction of the numbers employed on the

farms may lead to an increase in the numbers of unemployed in the towns.

The farmer, however, has a very special interest in the matter, for his living is to a very great extent dependent upon an adequate supply of capable hands being available. The successful running of any holding, large enough to be called a farm, must always depend upon a partnership between a capable employer and skilful employees. This is obvious in the case of large farms, but it is not less true in the case of small holdings such as exist at the present moment or such as may, in much increased numbers, result in the near future from the action of the legislature. In this case the partnership will be in many cases between a father and his sons fresh from the village school. Not only, therefore, will the father most earnestly hope that the effect of education may be to train up a succession of useful youngsters, but he may reasonably, as he is the paymaster, insist on his requirements being met.

In this respect it is pertinent to examine what is the extent of the farmer's financial burden. Taking "*Rural Education*" as that education which is carried on by the County Councils and not by Borough Councils, we find that the total amount spent on it in England and Wales in 1908-9 was 7,734,000*l*. This total was made up of 4,534,000*l*. received as Parliamentary Grants, and of 3,200,000*l*. from Local Funds.

In the case of Imperial payments the farmer takes his share as a member of the general public, but in the matter of local expenditure he, through the rates, carries a special burden of his own. In a paper read before the Farmers' Club last May, Mr. Trustram Eve¹ estimates—and no one with any claim to be considered in such a case will doubt the value of an estimate made by such an authority on this particular subject—that the rates on farm-houses, homesteads, and agricultural land amount to a total of 3,165,331*l*. One may roughly estimate at 25 the percentage of this sum due to the cost of education. There are, however, farmers who maintain that the whole of the relief from rates granted under the Acts of 1896, which we see from figures given in the paper by Mr. Eve already quoted amounts to 2,355,331*l*., is in reality counterbalanced by the Education Rate imposed since 1902. Though this must often be an exaggeration, it is not to be denied that the farmer has a heavy financial burden to bear for rural education.

To test how far the present system meets with the approval of those who carry this financial burden seemed to be pertinent at the present moment, so a letter containing a set of questions was sent to one or two agriculturists in almost every county of

¹ "*Agricultural Land and Local Taxation*," by H. Trustram Eve. *Journal of the Farmers' Club*, May, 1911.

England and Wales. As far as possible gentlemen actually engaged in farming were selected. Out of nearly a hundred such letters that were sent out, thirty-five were answered. This fact may be read in one of two ways: either that the sixty or so who did not answer were satisfied with the present system, or—and this is a view which rather appeals to one who has had experience of systematically collecting information from farmers—the interest which induced so many to answer must be considerable. The following is a full reprint of the letter.

ROYAL AGRICULTURAL SOCIETY'S JOURNAL.

10 Richmond Road,
Cambridge.

DEAR SIR,

I have been requested by the Committee of this Journal to ask your opinion on the following questions for the purposes of an article on Rural Education, which I, as Editor, have been instructed to write.

If you are good enough to answer these questions, or any of them, I would be glad to know if I may (a) make use of your name, or if not (b) state the County Council district from which your answer comes.

Yours faithfully,

K. J. J. MACKENZIE.

1. Are you satisfied with the education given in the rural or village school you are acquainted with in your County?

(a) From the point of view of its usefulness to the children in their future life's work on the land.

(b) From the point of view of enabling the children to realize any advantages there may be in a career on the land in the rural districts as against a life spent in a town or city.

2. If you are not convinced that the education is reasonably satisfactory as regards the above two points, will you kindly state:—

(a) If you consider that the attitude of the rural school-teacher fails through want of sympathy, training, or capability in bringing about the end you desire.

(b) Does the syllabus enforced by the school curriculum interfere with the proper instruction being given?

3. What improvements would you suggest?

(a) As regards teachers.

(b) As regards the subjects taught.

Any general remarks you are good enough to make would be greatly appreciated.

Name.....

Address.....

Date.....

It is now proposed to deal in some detail with the answers received. The first question was answered as follows:—Three answers were entirely and five partly satisfactory, while one was a qualified and *nineteen absolute negatives*. Seven papers either failed to afford an answer or gave only an indefinite one. These figures speak for themselves, and need no comment.

The answers to the second part of the first question are not easy to summarise. It may, however, be said that no one of the thirty-five answers speaks of any teaching being given which might enable "the children to realise any advantage there may be in a career on the land in the rural districts as against a life spent in a town or city." It is true that two of the thirty-five correspondents express themselves generally as satisfied, but there is no definite information showing that the teachers have treated of the subject in school. It is possible—it may be reasonable—to contend that such teaching is not included in school subjects. It strikes one, however, as very desirable to consider the advisability of introducing it as a matter for instruction in, at any rate, the evening continuation classes. Having been lucky enough, when lecturing to them, to make the acquaintance of many village schoolmasters, one is forced to believe that very little thought has been given to the point by the authorities. It would seem very desirable to let the elder children know such things as that large cities are not composed solely of mansions; that fine bridges spanning noble rivers often lead from park-like open spaces on one bank, to unhealthy slums on the other; and that vegetables in a greengrocer's shop are possibly not so nice, and are certainly more costly than those grown in a village garden. In the advanced classes it might be advisable to contrast earnings, rent, and the general health conditions of town and country. Obviously such teaching would require tact and judgment. As books dealing with the matter have been written, it must be possible at certain centres to institute lectures on such subjects for rural schoolmasters. No one, whether connected with the country or the town, can complain if the boys and girls in the village schools have through their education a better chance of gauging their future prospects, for it is common knowledge that some who now leave for the towns do not gain materially themselves, and if not actually an incubus, are certainly no great ornament to the State. On the other hand, some knowledge of what to expect from life in a city cannot deter those most suited to town work from seeking it. A great difficulty is that it means another subject for the master to master, and for the learner to learn, but discussion with those who can speak with authority entitles one to say that the matter is of sufficient importance to be worthy of serious consideration.

The first part of Question 2, as will be seen by reference to the circular letter on page 157, deals with the qualifications of rural teachers. The following paragraph summarises the answers received.

Eleven correspondents reported that the teachers failed for want of training, four that they failed in sympathy, one that they failed in all ways, and one that it was difficult to get teachers. Five reports were favourable, two were doubtful, and in thirteen cases the answers were indefinite.

The teacher plays so great a part in any educational scheme that the perusal of these answers gives grave cause for reflection. On the one hand, no one having the interests of agricultural life at heart can be satisfied with the fact that only five out of thirty-five correspondents express themselves as satisfied. On the other hand, a knowledge of the true state of affairs fills one with a feeling not far short of admiration. The country teacher is known to be less well paid than his *confrère* in the town, many educationists holding that a large proportion of capable village schoolmasters consider themselves merely on probation while working in the country, their ambition being to earn promotion as rapidly as possible to the more lucrative urban positions. Any one having any knowledge of the powers of a teacher over a class, more especially one composed of children or very young men and girls, will admit that the influence the instructor wields is enormous. A capable teacher can, furthermore, use this influence without in any way violating the most stringent rules laid down by a syllabus, and without in any way falling foul of the most skilful inspector. It would not be too much to say that a teacher giving lessons in a village school might quite unconsciously impart to his or her class a desire to migrate to the town. The matter of the adequate payment of village school teachers is, therefore, one for most serious consideration, and it is only to be attributed to the fair-mindedness of the present-day teachers that greater complaint is not prevalent as to their adverse influence on the children whose avocation is evidently on the land. Obviously, for every reason, the schoolmaster in the country should not be paid so low a salary that the education authorities in such parts are forced to rely on inexperienced teachers awaiting promotion to the towns, or worse still, to utilise the misfits of the profession.

The latter part of the second question deals with the syllabus enforced in country schools, and before dealing with the replies it may be well to repeat it.

“Does the syllabus (in your opinion) enforced by the school curriculum interfere with proper instruction being given?”

In eleven cases the question was answered in the affirmative,

that is to say that the syllabus does interfere with proper instruction being given. In five other cases this was considered to be partly the case. Against these views we have to set off only five absolutely and one qualified negative answers. Twelve indefinite answers including some failures to answer, were also noted.

Any one who, like the author of this paper, has had the opportunity of questioning large numbers of rural teachers, cannot have failed to note how little thought they have given to making ordinary school subjects agricultural in tone. The answers to this particular question, and to a certain extent the answers that follow, lead one to believe that others do not realise the possibilities or the importance of doing so. The history of Agriculture is so full of interest, not to say romance, that one shudders to think of its absolute neglect as a school subject. Having of recent years taken the trouble to gather information on the point, the writer is strong in the opinion that few, if any, of the best instructed young men from the country schools have ever had the opportunity of hearing the names, let alone the doings, of Tull, Townsend, or Bakewell, even though they have followed up their elementary education by going to continuation classes. Something has been done to make reading books agricultural, but little to make history, geography, and arithmetic (in its advanced stages) rural in sympathy. Therefore, without exaggeration, one may say village school children, when learning of the past, only hear about the doings in towns or cities, of wars and soldiers, and of people generally who make names for themselves in every other occupation but that of agriculture. One is further led to believe that when the young mind in the country school is being improved about the arrangement of the earth's surface, it is not deemed necessary to instruct upon those matters which lead to variation in the production of food or other natural produce of the soil. There is little evidence to show that the problems in mensuration or on other calculations, set to village scholars, are likely to further either sympathy with or knowledge of matters useful in husbandry. If matters are as described, and few will doubt that they are so, it is surely as necessary to alter the treatment of ordinary school subjects as to introduce—valuable as they undoubtedly are—nature study, gardening, or carpentering into the syllabus.

The questions dealt with above were followed by one asking for suggestions as to improvements. The first part as regards teachers was answered as follows:—

Six correspondents suggested that only teachers from the rural population or with an interest in and knowledge of country life should be selected.

Two suggested that agriculture and rural subjects should be much more widely dealt with than at present in colleges for teachers: while two more suggested courses of studies for teachers dealing with rural life.

Suggestions which came from a single source in each case were: That teachers should get a special training on the Continent; *that teachers should be chosen from a better class with a wider outlook*; that they should be taught butter-making, gardening, and the elements of agriculture; that they should have more time for practical instruction; while yet another correspondent more generally recommends simply "instruction."

One answer recommends a Technical College for rural teachers.

Yet another recommends more object lessons for the children, "as in Canada."

One answer is that no improvements are required; and yet another that it is difficult to suggest any, which we may take as nearly completely satisfactory as the last one.

Finally comes an answer which, though at first sight not perhaps included in those we may say were expected when the questions were framed, is yet so apposite that we must quote it, and that is, "avoid politics."

The above *résumé*, which has to be brief, only partially shows the insistence of the correspondents upon the necessity of rural teachers being in sympathy with rural conditions. Whether this be acquired by inheritance or residence, or preference, the necessity of special training seems obvious. It is a cause for wonder, if any "agriculturists" are employed at the training colleges for teachers, why the authorities hide them so carefully. For though I have a large acquaintance amongst those teaching agriculture, or sciences applied to agriculture, I have never been privileged to meet one whose occupation was that of lecturer at a training college for teachers. If, as I believe is the case, no one academic agriculturist of repute is so engaged, it is most certainly a matter which might engage the attention of those responsible. But this imperfection is easier to remedy than that recorded in the answer which says that a better class of teachers is wanted. The correspondent who writes this—a well-known north-country farmer, who, I regret, does not give me leave to use his name—cannot, it is feared, be satisfied until the country school-teacher is at least as well paid as his *confrères* in the towns.

The second part of the question, that dealing with suggested improvements in subjects suitable for rural schools, was dealt with as follows:—

"What improvements would you suggest as regards the subjects taught?"

In no less than thirteen cases, either no answer or only an indefinite one was given.

Seven correspondents advocated the teaching of gardening and the establishment of school gardens, which, one of them stated, had been very successfully carried out in Lincolnshire and Staffordshire.

Four answers were in favour of teaching land tillages and farm work, three in favour of teaching about rural life generally, and three suggested animal culture as a subject; one of these last three proposing *that children should be taught that animals are living beings*.

Nature study was also urged by these correspondents, and one of them adds that this is carried out very successfully at present in Lincolnshire and Staffordshire. He also tells us that woodwork is another subject taught in these counties.

In single cases recommendations were sent in favour of lessons in geology and botany.

Plenty of "observation lessons" several times a week "on all matters relating to farm and garden" is proposed in one case, and object lessons in ordinary garden and farm products in two others.

In yet another answer it is suggested that the pictures in schools should relate to rural life, and it is stated that the most attractive pictures found in such places at present refer mostly to urban subjects. Two proposals were received that books on country life should be made available in the schools. One paper tendered the advice that plain needlework should be taught the girls, while drilling was recommended in another.

The opinion was expressed in one case that there was too much desk work; while no less than three answers contained the advice to avoid cramming.

Finally, four correspondents gave it as their opinion that in elementary schools only the three "R's" should be taught.

Want of space makes it impossible to treat of all these suggestions, but two of them are so important that they must be alluded to. It may be at once admitted that those works of husbandry spoken of as tillages cannot be taught in school or in continuation class, but that is no sort of reason why the boys and young men should not be given any instruction in the theory of such matters. How the plough cuts off and turns the furrow-slice, why this is useful, the application of elementary botanical knowledge to weed destruction, the action of weather in helping the implements to do their work, and one thousand other points of interest when getting a tilth, are all admirable possibilities on giving a good education. Given the

knowledge, any decent teacher with a spark of agricultural enthusiasm could make these subjects of extreme interest, and of much use to their elder pupils. These matters might be the first subjects thought of when the village school syllabus is arranged, and not, as is at present the case, left among the last, if not actually ignored. Without such instruction many of those destined to follow the plough for the rest of their lives are not only deprived of much pleasure, but their life's employment is, by the action of the education authorities, reduced, as far as it is possible to do so, to something akin to the treadmill.

As regards the study of animal-husbandry, as there is but one live-stock theatre in all our English Agricultural Colleges, it is perhaps needless to remark that no sensible person suggests the introduction of cattle or even pigs and sheep into the village school-house for object lessons. A close study of the work on view at nature study exhibitions has shown how very little of what is possible has been done. Pictures of Scotch colleys on mountain tops, copies, evidently from books, of exotic plants, even cases of small bottles of "proprietary" manures come to mind, but one has no recollection of studies showing any appreciation of the lines that indicate useful points in the bodies of our farm stock. Still less does one know of work showing instruction about the life of farm animals. Experience has taught the writer that simple diagrams may be of great use, even with very elementary country classes, in making clear the more simple phenomena of animal life. It ought not to be necessary to emphasise that a boy will be in a better position to feed a calf if he knows something of the digestive apparatus, that another youth will be less likely to over-drive fat sheep if he has heard something about the circulation of the blood, that waggoners would have fewer "colds" among their teams were they taught something of the delicacy of the respiratory system, and so on. The amount of instruction, however, now given on these matters is well summarised, we fear, by the experienced correspondent who suggests "that children should be taught that animals are alive."

General Remarks.—As might be expected, there is a great variety in the proposals and criticisms given under "General Remarks." We will first note those in which an alteration in the present system is definitely proposed.

In four of the papers it is urged that the children should leave school at an earlier age, while in two others it is proposed to allow them to do so at the discretion of the teachers.

Mr. John Rose, of Aylesbury, after forty years' experience, and having farmed eighteen hundred acres, urges farmers to

encourage lads to go to continuation classes. Another correspondent states that, in his opinion, the need is for continuation classes in subjects applicable to practical agriculture.

A member of a Midland Education Committee recommends that peripatetic teachers should instruct in hedging, thatching, &c., until such time as the regular teachers are competent to teach these subjects.

Another gentleman tells us that he has found that having plans of the neighbourhood of the village made with the help of the Ordnance Survey was found useful, but that the degree of advantage derived from this depended largely on the head master. He also approves of physical drill. The same correspondent suggests that technical education should be paid for out of Imperial and not local funds.

A suggestion from another correspondent is that there should be workshops and an instructor for them in every village school.

Finally, one correspondent considers that the managers of schools in country districts should have the management of their schools.

The following refers to answers in which more or less general complaints are made without proposing any specific remedy :—

Three correspondents complain of the education in general, while three more complain that the education given in accordance with the Act tends to lead the children to prefer a town life.

Mr. Thomas Latham, of Bishop's Court, Dorchester, states that he has sat on many committees with no good result, as the Board of Education do not understand the subjects necessary for rural life.

Another answer received is that the old School Boards were much better than the County Councils. Another concludes by saying that, if farmers were more careful to employ boys as soon as they leave school, as is done in the writer's parish, there need be no complaint of education. An interesting syllabus of the work at the school in question has to be omitted for want of space.

A member of a County Council thinks that more discretion should be allowed the school teachers, so that they could give a more thorough education to the more promising pupils, while cramming those children who will evidently have to live by manual labour would be avoided. A similar idea is evidently that of Mr. A. Iles, of Fairford, Gloucestershire. After complaining generally of the education as tending to fit the children for a town life, he says that the future farm labourer has at present to take the same line as the future clerk, mechanic, and in some cases the small farmer's son.

In one case a proposal is made that books describing country life should be chosen for reading in the schools, and that the Saturday half-holiday should be used for classes on different farms. Yet another is to the effect that only general education should be given in the schools, and again another states that school education is overrated, and that application is seldom acquired.

We finish by noting two criticisms, one of which condemned the number of women teachers in the schools, while the other was to the effect that special training might result in too many farm labourers being turned out.

In eight cases indefinite answers or none at all were received.

In reading this last batch of answers or remarks, one may well remind oneself that the most important person in the educational system is the pupil, whether a child or older person. They are the raw material on which the country life must depend for its existence, and to which the towns must look for a supply of people of constitution and vitality such as "rural" up-bringing gives. The State in taking over the child's education has no right to deprive it of its birth-right, and we take it that part of that birth-right is the possibility of following in its parent's footsteps. To penalise a child in order that it may do this is, however, utterly contrary to the dictates of sound education. *Reduction of the age for schooling in the case of the village children*, as suggested by several correspondents, is a remedy often urged by farmers all over the country without consideration of the disadvantage it may entail upon the country-as against the town-taught child. What is wanted and what is becoming more imperative every day is true education which trains the scholar's intelligence to the best advantage, while permitting him to see the advantages of country life, and not merely instructs concerning surroundings other than those amongst which he has been born. Mr. Rose, of Aylesbury, strikes a much more patriotic note than those who would diminish the education given, when he urges his brother farmers to see that their young farm hands go to continuation classes.

But the desire to get boys away from school early speaks for itself. Boys who are considered the best at school and who are kept there till they have done the VII. or VIII. standard are, to use the words of a well-informed correspondent, "generally declared to be the worst on the land. This seems to be the final condemnation of any system of education. With a sound system, the VII. standard boy leaving school at fourteen ought to be head and shoulders above the boy who left at twelve after getting through the IV. standard and a 'labour' examination." Many of our correspondents think that this is

not so in practice. Our own experience tells us that most farmers say that the reverse is the case.

Mr. Latham's very trenchant remark, the general perusal of the letters around which this article is written, and one's own experience as a teacher, though in another sphere, compel one to believe that farmers and others belonging to the land have more to do than is suggested by the veteran agriculturist, Mr. Rose. The early part of this paper tries to show that the farmer pays full share for this schooling so that it is his privilege and duty to "call the tune." Mr. Latham's complaint is of a state of affairs that might be expected: townspeople are not likely to have as good an influence on rural education as those, assuming that they are equally competent, who live by the land. Rural public opinion might operate to such effect that it would be impossible to find any country children receiving an education which would be chiefly useful to them in the course of a life spent in a town. The world's history shows that public opinion cannot be brought to bear upon any subject without trouble—the leading men in a community have to work to arouse it. It almost seems that more of the energy, intelligence, and determination which has made our good farmers and stockbreeders the best in the world should be turned to the matter of education. For it is now realised that every rival we have, friendly or otherwise, has for some years past spared no effort to ensure that the agriculturists who compete with us should have the best education, elementary or technical, that brains and money can provide.

The practice of training the memory, while straining such intellect as the child possessed, by driving—with a cane or otherwise—innumerable dates, facts, and figures into an unhappy pupil's mind, is more or less a thing of the past. It is now sought to replace such practice by education, and the only education worthy of the name consists in training the intellect as a whole, the memory being relegated to its proper place as one of the mental faculties demanding certainly not greater intellectual cultivation than do observation, perseverance, the power of looking ahead, &c. Wrangles over the advantages and disadvantages of classics, modern languages, science, or mathematics, for the purpose of *educating* the town boy are constantly arising, but in a rural district it must seem best *and most natural* to make use of rural subjects for the purpose. Thus a course of lessons on the soil, on animal life as represented by farm stock, or by insects important in husbandry, on plant life, on tillage, &c., *properly* given, would train the boys' intelligence as well as would lessons on any other set of subjects. They would further have the advantage of providing him with information both useful and interesting

to one leading a country life. Such an education, however, can only be given by a teacher who himself appreciates the interest of country life together with its advantages. Such a one, and only such, is in a position to create the "atmosphere" on which everything depends. The State must therefore *be compelled by the agricultural community* to so arrange that the teacher can secure just as good pay and promotion in the country as in the town.

Finally, if the advantages of elementary education are not to be greatly reduced in value, or even altogether lost, it is necessary to take into account those young men who wish to stay on the land and whose presence there is of vital importance to the welfare of the community as a whole. It is well here to use the sapient words of a correspondent—unfortunately he does not give permission to use his name—who has evidently studied this matter among the hardy farm hands in the North. He says: "A very great want in most country districts is the lack of opportunities for reading and such entertainment as the present-day education has aroused a taste for. Two generations ago there was no education, and the labourer was content to work, eat, and sleep. To-day the young labourer has learned to read, and sometimes to think, and if the trained faculties cannot find employment he is unhappy, and naturally he goes to the town where he can find such entertainment as his education makes him wish for. Depopulation of the country districts will not be stopped until employment can be found for these awakening faculties."

The "opportunity for reading" asked for is easy enough to supply, and it is only very much to be regretted that the example of Cambridgeshire in this respect is not universally followed. In this county the Education Committee are the proprietors of a very fine library of some 5,000 volumes, which are in constant circulation among the village communities: sixty boxes of books usually being out at one time in different centres. We learn on the best authority that the expenses connected with this library are not very great. Started in 1894, a thousand pounds was spent, over a period of three to four years, on what may be called capital outlay. Since then an annual expenditure of from 50*l.* to 75*l.* has sufficed to meet all the expenses of management and up-keep. Books alone, however, are not enough to satisfy the craving so ably described by the correspondent last quoted. We must devise such things as continuation schools which will not simply satisfy but will further develop this craving. Lectures, not wholly devoted to money-making or to "tip-giving," are wanted so as to arouse and maintain interest in the doings of the great world, in the wonders of nature, and above all, in the common things

surrounding those who live in the country-side. The day's work of the intelligent industrious agricultural labourer may be full of interest—it will be a thousand times more so if he has been properly educated—for his summer evenings his garden will probably afford that recreation which change of work gives, but in the long hours of winter darkness 'twixt labour and bed, he is at a great disadvantage when compared with his fellow in the towns, as regards opportunities for decent recreation or intellectual occupation of his leisure. Not much imagination is required to enable one to appreciate that this very want gives an invaluable opportunity of well-doing to those responsible for Rural Education among village folk.

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December, 1911.

ON THE VITALITY OF FARM SEEDS.

SOME experiments on the vitality of seeds were reported by me in the Society's Journal for 1896 (page 147). As the age of the seeds tested was not certainly known, I decided to undertake a further and more extensive series of experiments with seeds of known age. The objects of these experiments were to test how long, under ordinary conditions, the vitality of certain seeds was maintained, to determine the annual loss of vitality in the seed, to help the farmer and the seed merchant to ascertain the real value of seeds carried over for one or two years, and to investigate the rapidity of germination of the seeds experimented with.

I secured samples of forty-three seeds, from the harvest of 1895, of the kinds more frequently used by farmers. These included six cereals, seventeen grasses, twelve clovers and allied plants, six turnips and allied plants, carrot, and yarrow. The two samples of barley and cocksfoot gave after some years results so nearly similar that one of each kind was discontinued. Duplicate samples of clover were used, one of which had been treated to secure the germination of the "hard" seeds at the same time as the bulk. "Hard" seeds occur in all clovers, sometimes to the extent of 15 per cent. They possess no character by which they can be separated from the others. A successful experiment to get rid of the hardness had been made at the Svalop Agricultural Station, Sweden. It was assumed that the seed-covering in such seeds was so indurated that it prevented the entrance of the moisture necessary to the

growth of the embryo plant. A machine, the principal part of which was a cylinder lined with sharp steel points, was made; in action the cylinder was rotated rapidly, and the seeds in passing through were pelted against these points with a force which rasped the surface of the hard seeds and did no hurt to the others. A similar machine was made in England, at my suggestion, with the result that clover seeds may be purchased with a guaranteed germination of 98 or 100 per cent. This gain was clearly established by these experiments, and the "dressed" seeds were discontinued after the eighth year.

These discontinued samples being deducted, there remain thirty-five different kinds which have been tested year after year till, one after another, they lost their vitality. In this present year—1911—the Black Oat, which had outlived all the others, has failed to show any signs of life, though over 300 grains were tested.

The samples have been kept during the sixteen years in the original paper bags, and have occupied two close-fitting drawers in a cabinet placed against an inner wall of my laboratory. Each year they have been regularly tested in the germinating case, kept at a temperature of 70° to 80° Fahr., on plates of porous porcelain, or between blotting paper, and the germinating seeds have been removed day after day, and their number recorded. A diagram showing the progress of the experiments was prepared some years ago and exhibited at the Society's Annual Shows, being brought up to date each year.

The final results are shown in detail in the tables and diagrams inserted in this paper. It should be noted that the germination of seeds in the eighth year is in many cases below that of the same sample in the ninth year; this is evidently due to some unrecognised unfavourable condition vitiating the experiments in that year. The only two seeds which showed complete loss of vitality in that year were the two smaller fescues.

I. Cereals.—In the case of barley and wheat the germination is but little affected during the first five years, but thereafter a rapid loss of vitality occurs and proceeds at an increasing rate till, in the tenth year, no live seeds remain. The curve shown by the oats is quite different: not until after the ninth year do they show any serious loss of vitality, and in another five years the white oats had no living seeds left, though the black oats germinated for two years longer. This group of cereals gives us the key to the results of the whole experiments. The difference between wheat and barley on the one hand, and oats on the other, is the greater protection afforded to the embryo of the oats by the fact that in its case the glumes, which fall off as chaff in the wheat and barley, remain attached to the seed. It will be seen in the experiments that the retention

of vitality is governed by the more or less effective protection of the embryo. (Plate I.)

II. Grasses.—For the sake of clearness, the grasses have been placed in two diagrams, one containing the best pasture grasses, the other those of less value. Though the death of all the samples occurred between the eighth and the thirteenth years, not a great range of variation, yet the manner in which the loss of vitality developed is very diverse. There are three main types—the first, represented by timothy and tall oat-grass, where the vitality is well maintained for the first four years, and thereafter drops rapidly, much as in the case of the barley and wheats. The second, of which hard fescue and sheep's fescue are the most characteristic representatives, drops rapidly from the first to a point below 10 per cent., but then remains practically stationary for a year or two before the vitality disappears altogether. Lastly, some grasses have a fairly steady loss of vitality from first to last, the typical instance being Italian rye-grass, meadow fescue being a somewhat less perfect example of this group. The other grasses give curves more or less related to these three types. (Plates II. and III.)

III. Clovers.—The three true clovers (red clover, white clover, and alsike) have a characteristic curve: very little loss of vitality during the first three or four years, then a rapid loss for another four years or so, and finally, the last 10 per cent. of germinating power is only slowly lost during the space of another three or four years. The red clover retains its vitality best at the start, the white clover has the least rapid loss during the middle period, and the alsike holds more tenaciously to the last 10 per cent. of its germinating power. Trefoil loses at a very steady rate from first to last, and sainfoin almost as steadily; while lucerne has a very curious curve, losing heavily at first, and then keeping practically level from the fifth to the ninth year. (Plate IV.)

IV. Turnip and its Allies.—The special feature here is the remarkably rapid drop in vitality in the course of the tenth year shown in kale, white turnip, and the two swedes. The drop in the yellow turnip and rape is decidedly slower, beginning somewhat earlier. It is interesting that five out of the six cruciferous seeds lost their vitality in the same year; the one which failed earlier (rape) is one whose starting point was not so good, its original germinating power being only 85 per cent. as against 93 to 100 per cent. in the other five.

The two plants not allied to the turnip, but included (for convenience sake) in the same diagram, show a different course; while the crucifers maintain their vitality well for three to five years, both carrot and yarrow lose as rapidly at the first as they do later. (Plate V.)

What causes the death of the seed? Under the protection of the seed-coat there is an embryo plant with a supply of food sufficient to support it when it begins its active life. The embryo plant consists of a short stem, bearing one or two leaves at its apex and a minute rootlet at its base. Among the varieties of seeds experimented upon, clovers and turnips have the necessary food stored in the tissues of the embryo plant, but in the cereals and pasture grasses and in carrot and yarrow the small embryo plant has its food stored beside it within the seed-coat. The embryo is the essential element in the seed; it alone possesses vital force. It has within itself, even in the cereals and seeds like them, sufficient food for the earliest stages of growth. If separated from the store of food outside it, the small embryo of wheat can grow to several times its own length. The store of food is not alive, nor is it modified by the death of the embryo; it remains unaltered both chemically and physiologically for a long time. Moistening seeds that had been dead for six years, and removing the dead embryo, I have placed the embryo of a living plant in the cavity left by the removal, and seen it appropriate the stored food as effectively for its own growth as embryos that were tested while still in their natural position.

The embryo remains dormant until the heat and moisture necessary to start it into active life are available. Generally the seed has a period of rest. Seeds produced early in the season remain as a rule unaffected by the moisture and heat of summer and autumn. Not till the following spring do they begin their active life. But some seeds germinate in the year in which they are produced. The farmer, to his cost, knows this when his wheat is blown down and, a wet season supplying the needed moisture, the grains germinate while still in the ear. Moisture without heat, or heat without moisture, will fail to make the seed germinate. The seeds of 1895 experimented upon had, throughout the years they were in my cabinet, a temperature sufficient for germination, but the moisture was wanting. Seeds buried too low in the ground fail to germinate because, though they have sufficient moisture, they do not receive the necessary heat. Mr. F. Stratton, F.L.S., has just told me of the appearance in enormous quantities of the water chickweed on an embankment made with river sediment from the banks of the Medina, in the Isle of Wight, in which the seeds must have been resting for not less than twenty years.

If a seed is to retain its life, moisture must be present in the embryo plant. Loss of moisture beyond a certain point, whether it occurs rapidly or gradually, means the death of the seed. Temperature may be varied within very wide limits

without killing the seed, so long as the moisture is not removed. Air-dried seeds (among which were oats and peas) have been exposed for four days to a temperature of 330° to 345° Fahr. below freezing point, and thereafter slowly thawed; their germinative power showed no decrease from this treatment. There is an upper limit of temperature, somewhere from 130° to 200° Fahr. (or, with special precautions, even higher), at which chemical changes taking place in the live tissues cause their death. The temperature in my cabinet never, of course, came anywhere near this limit, consequently the gradual death of the seeds in it was due not to chemical alteration produced by temperature, but to the steady loss of moisture going on continually at ordinary air temperatures. Once the seed is dead, other changes of a very gradual character go on, due to slow oxidation, and in the end give the whole seed a charred appearance, like that produced by burning, *i.e.*, by rapid oxidation. Such are the genuine grains of "mummy wheat," and the grains found in the Romano-British granaries hollowed in the chalk of the south-west of England. While no seed could possibly survive under the conditions in which mummy wheat and the Roman granary wheat were placed, it is possible for a thick-coated seed under favourable conditions to live a very long time. Seeds of the sacred Lotus of Egypt (*Nelumbo*) germinated after having been for a hundred years in a cabinet in the British Museum, and for many years before that in Sir Hans Sloane's keeping. The duration of life of different seeds is no doubt chiefly determined by the amount of protection afforded the embryo by its coverings.

RAPIDITY OF GERMINATION.

The details are given in the tables appended to this paper.

In these experiments records were also kept to ascertain the rapidity of germination, a character in which seeds differ greatly. Looking at the tables here given, we see that in 1896, the first year of the experiments, no less than eleven kinds of seed completed their germination within a week, *viz.*, barley, white oats, meadow fescue, timothy, white clover, sainfoin, the two swedes, the two turnips, and rape. At the other extreme are the species where not more than half the living seeds germinated within the first week, such as sheep's fescue (50 per cent.), sweet vernal (49 per cent.), cocksfoot (45 per cent.), wood meadow grass (37 per cent.), and smooth-stalked meadow grass (5 per cent.).

As to the effect of age on rapidity of germination, one would naturally expect that the older seeds would need time to regain the portion of natural moisture lost by keeping before absorbing the further moisture necessary for germination. The time

required would be very small in the second year, when the seed had dried but little, but would increase later. That this is so is shown by the tables. It is specially distinct in the cases where all the seeds germinated early: in the second year a small percentage lagged into the second week, and in the third year some of them were seen to lag even further behind; see, for examples, green-top swede and the two turnips.

In the case of seeds which were specially slow in germination, the result is at first sight more puzzling. Every one of the five shows a *more* rapid germination in the second year than in the first, and in three of them it is more rapid still in the third year than in the second. These slow-growing seeds need a larger total amount of heat and moisture to start them germinating, which they get in the germinating case by the lapse of a little more time. Presumably they are those which under open-air conditions may lie one or two years in the ground without germinating. After a year or two some change makes them able to do with a less total amount of heat and moisture, so that in nature they grow after such delay, while in the experimental conditions their growth is earlier. By tracing their history a year or two longer, as in the subjoined table, we find that all of them begin to "lag," just as do the rapidly-growing seeds before referred to.

PERCENTAGE OF ALL LIVING SEEDS WHICH GERMINATED IN THE FIRST WEEK.

	1896	1897	1898	1899	1900	1901
Sheep's Fescue	50	68	44	57	31	0
Sweet Vernal	49	55	58	61	16	19
Cocksfoot	45	83	74	32	1	9
Wood Meadow Grass	37	73	35	47	27	13
Smooth-stalked Meadow Grass	5	40	29	16	18	2

NOTE ON LIVING EMBRYOS TRANSFERRED TO DEAD SEEDS.

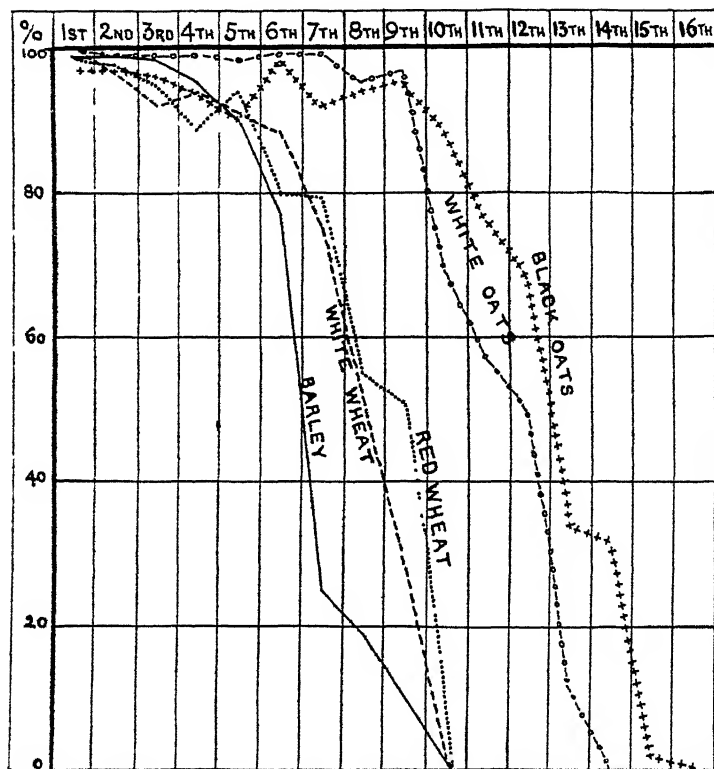
Some years ago Dr. Horace Brown found that the embryo of wheat, when transferred from the store of food in its own seed and placed on the store of food of another seed from which the embryo had been removed, could utilise the food as easily as if it had never been moved.

Later, Miss Jane Smith carefully investigated the condition of the food supply in grains of wheat twenty or more years old. She found that not only were the starch grains in perfect condition, but the enzymes remained unchanged. The enzymes become active by the influence of the living embryo, and convert the starch into dextrine, which can be utilised by the growing embryo.

PLATE I.

GERMINATION OF CEREALS.

In sixteen successive years.

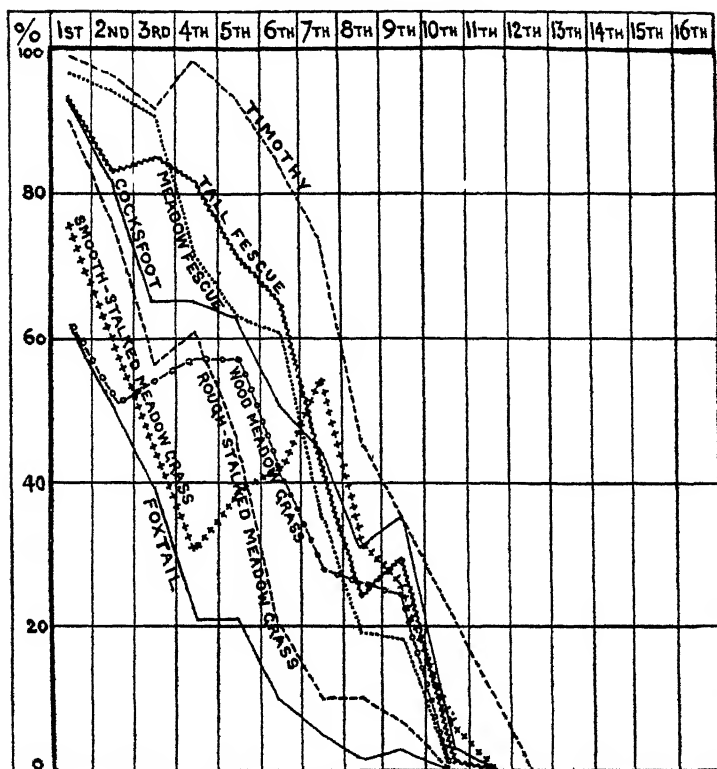


Percentage of seed germinated each year

Seed	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
Barley .	99	99	98	95	90	77	25	19	0	—	—	—	—	—	—	—
White wheat .	100	97	92	94	88	75	29	0	—	—	—	—	—	—	—	—
Red wheat .	99	96	95	83	94	80	79	55	51	0	—	—	—	—	—	—
White oats .	100	99	99	99	98	99	99	95	97	69	57	49	12	0	—	—
Black oats .	97	97	96	94	90	98	92	94	93	88	76	68	34	32	2	0

PLATE II.
GERMINATION OF PASTURE GRASSES (A).

In sixteen successive years.

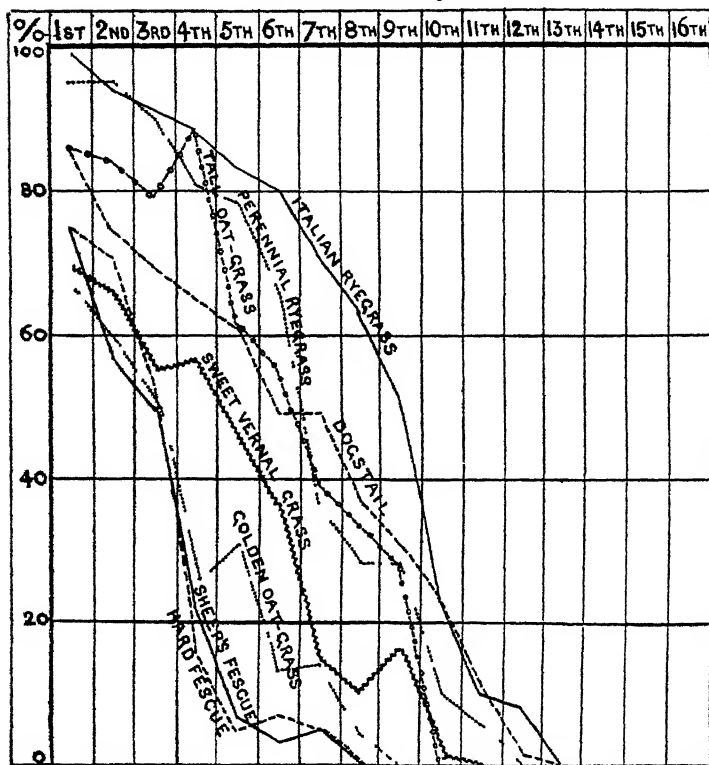


Percentage of seed germinated each year.

Seed	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
Foxtail	62	51	39	21	21	10	5	2	3	0	—	—	—	—	—	—
Rough-stalked meadow grass	90	77	57	61	46	20	10	10	7	0	—	—	—	—	—	—
Meadow fescue	97	94	91	72	63	61	35	19	18	0	—	—	—	—	—	—
Wood meadow grass	62	52	5	57	57	41	28	?	24	0	—	—	—	—	—	—
Tall fescue	93	83	85	82	72	65	40	24	29	1	0	—	—	—	—	—
Cocksfoot	93	82	65	65	63	51	44	31	35	3	0	—	—	—	—	—
Smooth-stalked meadow grass	76	?	?	31	38	42	54	32	26	7	0	—	—	—	—	—
Timothy	99	97	92	98	93	84	74	46	?	8	12	0	—	—	—	—

PLATE III
GERMINATION OF PASTURE GRASSES (B)

In sixteen successive years

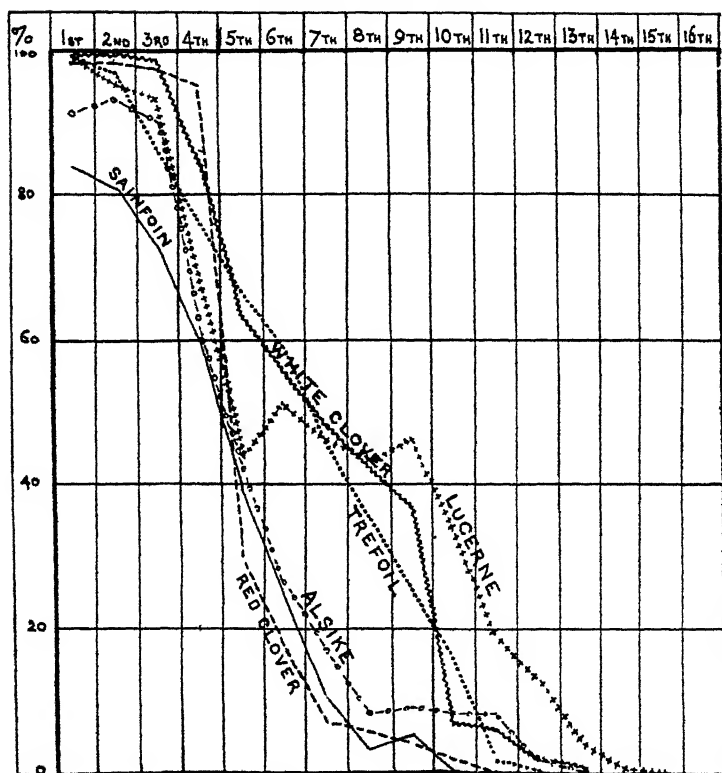


Per entage of seed germinated each yen

Seed	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
Sheep's fescue	75	77	70	22	7	3	5	0	—	—	—	—	—	—	—	—
Hard fescue	75	71	73	16	5	7	5	0	—	—	—	—	—	—	—	—
Golden oat grass	66	51	40	26	31	13	14	4	0	—	—	—	—	—	—	—
Tall oat grass	38	84	79	88	62	55	39	2	28	0	—	—	—	—	—	—
Sweet vernal grass	69	66	75	57	—	37	15	2	16	1	0	—	—	—	—	—
Perennial ryegrass	95	95	90	81	78	68	56	28	28	10	6	0	—	—	—	—
Dogstail	86	74	69	7	61	39	39	37	31	23	11	2	0	—	—	—
Italian ryegrass	99	94	9	86	83	80	71	63	52	23	10	8	0	—	—	—

PLATE IV.
GERMINATION OF CLOVERS, ETC.

In sixteen successive years

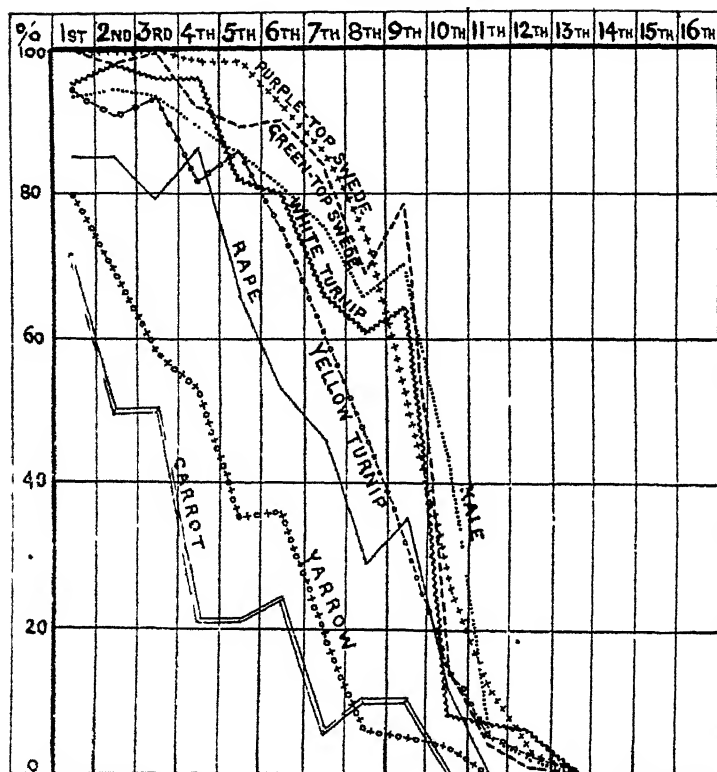


Percentage of seed germinated each year.

Seed	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
<u>Sainfoin.</u>	84	81	73	60	39	24	11	3	5	0	—	—	—	—	—	—
Red clover	98	98	97	95	30	18	7	6	4	2	0	—	—	—	—	—
Trefoil	99	97	86	88	67	79	46	35	7	16	2	0	—	—	—	—
Alsike	91	93	90	60	12	27	17	8	9	8	8	2	0	—	—	—
White clover	99	99	98	84	63	31	48	26	37	7	6	2	0	—	—	—
Lucerne.	99	97	93	7	44	51	46	43	46	34	19	13	4	1	0	—

PLATE V.
GERMINATION OF TURNIPS, ETC.

In sixteen successive years.



Percentage of seed germinated each year.

Seed	1886	1887	1888	1889	1890	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911
Rape	85	85	79	86	86	53	46	29	35	12	0	—	—	—	—	—
Green-top swede	100	98	100	92	89	90	84	69	78	14	4	1	0	—	—	—
Kale	93	94	93	?	86	81	75	66	70	44	5	2	0	—	—	—
Yellow turnip	94	91	93	82	86	75	?	47	?	14	5	2	0	—	—	—
Purple-top swede	100	100	100	98	98	92	85	74	?	25	12	3	0	—	—	—
White turnip	95	98	96	96	82	80	60	61	64	8	7	6	0	—	—	—
Carrot	68	50	50	21	21	24	6	10	10	0	—	—	—	—	—	—
Yarrow	80	69	58	53	35	36	19	6	5	3	0	—	—	—	—	—

RAPIDITY OF GERMINATION

Table showing the progress of germination during the first three years.

I. CEREALS.

Seed	Year	Germination		Germinated per cent.				Failed per cent
		First day	Last day	First week	Second week	Later	Total	
White wheat . . .	1896	3rd	11th	95	5	0	100	0
	1897	2nd	7th	97	0	0	97	3
	1898	3rd	8th	91	1	0	92	8
Red wheat . . .	1896	3rd	18th	79	13	7	99	1
	1897	2nd	5th	98	0	0	98	2
	1898	3rd	7th	95	0	0	95	5
Barley	1896	2nd	5th	99	0	0	99	1
	1897	2nd	4th	99	0	0	99	1
	1898	3rd	10th	97	1	0	98	2
Black oats . . .	1896	3rd	67th	85	3	9	97	3
	1897	2nd	8th	96	1	0	97	3
	1898	3rd	7th	96	0	0	96	4
White oats . . .	1896	3rd	6th	100	0	0	100	0
	1897	2nd	8th	98	1	0	99	1
	1898	3rd	15th	97	1	1	99	1

II. PASTURE GRASSES.

<i>Dactylis glomerata</i> , L. (Cocksfoot)	1896	3rd	103rd	42	9	42	93	7
	1897	4th	108th	68	5	9	82	18
	1898	4th	193rd	48	12	5	65	35
<i>Festuca pratensis</i> , Huds. (Meadow fescue)	1896	2nd	5th	97	0	0	97	3
	1897	3rd	11th	89	5	0	94	6
	1898	4th	70th	74	15	2	91	9
<i>Festuca elatior</i> , L. (Tall fescue)	1896	2nd	100th	86	1	6	93	7
	1897	3rd	77th	79	1	3	83	17
	1898	4th	193rd	82	3	0	85	15
<i>Festuca ovina</i> , L. (Sheep's fescue)	1896	3rd	104th	38	10	27	75	25
	1897	3rd	80th	39	11	7	57	43
	1898	4th	31st	22	20	8	50	50
<i>Festuca duriuscula</i> , L. (Hard fescue)	1896	3rd	36th	54	14	7	75	25
	1897	3rd	23rd	52	15	4	71	29
	1898	4th	17th	25	25	3	53	47

RAPIDITY OF GERMINATION.

II. PASTURE GRASSES—continued.

Seed	Year	Germination		Germinated per cent.				Failed per cent.
		First day	Last day	First week	Second week	Later	Total	
<i>Phleum pratense</i> , L. (Timothy)	1896	2nd	4th	99	0	0	99	1
	1897	2nd	6th	97	0	0	97	3
	1898	3rd	193rd	89	1	2	92	8
<i>Alopecurus pratensis</i> , L. (Foxtail)	1896	3rd	100th	43	6	13	62	38
	1897	3rd	25th	38	8	5	51	49
	1898	4th	144th	26	11	2	39	61
<i>Anthoxanthum odoratum</i> , L. (Sweet vernal grass)	1896	4th	129th	34	17	18	69	31
	1897	3rd	48th	36	26	4	66	34
	1898	4th	193rd	32	16	7	55	45
<i>Arrhenatherum elatius</i> , M. & Koch (Tall oat-grass)	1896	2nd	42nd	80	5	1	86	14
	1897	3rd	11th	80	4	0	84	16
	1898	3rd	54th	75	3	1	79	21
<i>Trisetum flavescens</i> , Beaur. (Golden oat-grass)	1896	4th	92nd	58	3	5	66	34
	1897	3rd	15th	48	3	8	59	41
	1898	3rd	36th	35	14	1	50	50
<i>Cynosurus cristatus</i> , L. (Dogtail)	1896	3rd	103rd	70	10	6	86	14
	1897	3rd	99th	67	5	2	74	26
	1898	4th	62nd	51	16	2	69	31
<i>Poa nemoralis</i> , L. (Wood meadow-grass)	1896	3rd	212th	23	7	32	62	38
	1897	5th	85th	38	10	4	52	48
	1898	4th	122nd	13	20	4	37	63
<i>Poa pratensis</i> , L. (Smooth-stalked meadow-grass)	1896	6th	187th	4	2	70	76	24
	1897	5th	284th	4	1	5	10	90
	1898	4th	106th	4	8	2	14	86
<i>Poa trivialis</i> , L. (Rough-stalked meadow-grass)	1896	3rd	55th	77	10	3	90	10
	1897	3rd	85th	61	9	7	77	23
	1898	4th	385th	25	12	20	57	43
<i>Lolium perenne</i> , L. (Perennial rye-grass)	1896	2nd	18th	91	2	2	95	5
	1897	2nd	19th	92	2	1	95	5
	1898	2nd	36th	83	6	1	90	10
<i>Lolium italicum</i> , A.Br. (Italian rye-grass)	1896	2nd	118th	83	1	15	99	1
	1897	2nd	20th	91	0	3	94	6
	1898	3rd	193rd	64	2	15	81	19

RAPIDITY OF GERMINATION.

III. CLOVERS, &C.

Seed	Year	Germination		Germinated per cent				Failed per cent.	
		First Day	Last day	First week	Second week	Later	Total	Hard	Dead
<i>Trifolium repens</i> , L. (White clover)	1896	1st	4th	99	0	0	99	1	0
	1897	1st	5th	99	0	0	99	1	0
	1898	1st	9th	97	1	0	98	1	1
<i>Trifolium hybridum</i> , L. (Alsike)	1896	1st	36th	88	0	3	91	9	0
	1897	1st	4th	93	0	0	93	4	3
	1898	1st	11th	89	1	0	90	8	2
<i>Trifolium pratense</i> , L. (Red clover)	1896	1st	13th	97	1	0	98	1	1
	1897	1st	12th	97	1	0	98	1	1
	1898	1st	13th	96	1	0	97	1	2
<i>Medicago lupulina</i> , L. (Trefoil)	1896	1st	16th	98	0	1	99	0	1
	1897	1st	11th	96	1	0	97	0	3
	1898	1st	13th	84	2	0	86	1	13
<i>Onobrychis viciifolia</i> , Scop (Sainfoin)	1896	2nd	6th	84	0	0	84	0	16
	1897	2nd	5th	81	0	0	81	0	19
	1898	2nd	9th	72	1	0	73	0	27
<i>Medicago sativa</i> , L. (Lucerne)	1896	1st	35th	98	0	1	99	0	1
	1897	1st	5th	93	0	0	95	0	5
	1898	1st	7th	93	0	0	93	0	7

RAPIDITY OF GERMINATION.

IV. TURNIPS, &C.

Seed	Year	Germination		Germinated per cent.				Failed per cent.
		First day	Last day	First week	Second week	Later	Total	
Thousand-headed kale	1896	1st	14th	90	3	0	93	7
	1897	1st	7th	94	0	0	94	6
	1898	1st	11th	91	2	0	93	7
Green-top swede	1896	2nd	4th	100	0	0	100	0
	1897	2nd	14th	95	3	0	98	2
	1898	2nd	27th	96	3	1	100	0
Purple-top swede	1896	2nd	6th	100	0	0	100	0
	1897	2nd	5th	100	0	0	100	0
	1898	2nd	12th	99	1	0	100	0
Green-top yellow turnip	1896	1st	4th	94	0	0	94	6
	1897	1st	8th	90	1	0	91	9
	1898	1st	23rd	91	1	1	93	7
Green-globe winter turnip	1896	1st	5th	95	0	0	95	5
	1897	1st	12th	97	1	0	98	2
	1898	1st	35th	93	2	1	96	4
Broad-leaved winter rape	1896	1st	7th	85	0	0	85	15
	1897	1st	7th	85	0	0	85	15
	1898	1st	13th	73	6	0	79	21

V. CARROT AND YARROW.

Carrot	1896	4th	60th	50	9	9	68	32
	1897	5th	90th	15	31	4	50	50
	1898	5th	37th	28	17	5	50	50
Yarrow	1896	2nd	60th	68	4	8	80	20
	1897	3rd	30th	61	6	2	69	31
	1898	3rd	33rd	50	5	3	58	42

(continued from page 173.)

This interesting discovery suggested to me to test whether a living embryo could make use of the stored food in seeds that were several years dead. I obtained in the spring of 1909 samples of red and white wheat from the previous harvest, which germinated 97 and 99 per cent.; and I had in my possession samples of wheat which had been dead for six years. The seeds, living and dead, were placed in water for twenty-four hours. Then, by the dexterous hands of my assistant, Mr. Hans Th. Gussow (now Botanist on the Experimental Farm of the Government of Canada), the embryos were removed and carefully placed on living and dead seeds: that is to say, twelve embryos of white wheat were placed on twelve seeds of living white wheat, and the same on twelve dead seeds of white wheat. This was repeated with white wheat on red wheat, red wheat on red, and red wheat on white. The results are shown in this table:—

RESULTS OF EXPERIMENTS AS TO EMBRYOS UTILISING THE STORED FOOD
TO WHICH THEY HAVE BEEN TRANSFERRED.

Embryo	Seed	Living seeds	Dead seeds
White wheat on white wheat		10	11
Red wheat on red wheat		8	12
White wheat on red wheat		12	12
Red wheat on white wheat		12	12

These results clearly show that living embryos transferred to the food store of dead seeds utilise it freely, and that the store of food retains all its properties for many years after the seed is dead.

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Norwood, S.E.

WILLIAM CARRUTHERS.

CONTEMPORARY AGRICULTURAL LAW.

I.—LEGISLATION.

THE principal Act affecting agricultural interests passed in the year 1911 is the Protection of Animals Act, 1911 (1 and 2 Geo. 5 c. 27), which consolidates, amends, and extends previous enactments relating to animals and knackers and makes further provision with respect thereto. Section 1 of the Act defines the offence of cruelty within the meaning of the Act. It includes (a) cruelly beating, kicking, ill-treating, over-riding, over-driving, over-loading, torturing, infuriating, or terrifying any animal, or procuring or permitting the same, or by wantonly or unreasonably doing or omitting to do any act causing any unnecessary suffering, or (being the owner) permitting any unnecessary suffering to be so caused to any animal; (b) conveying or carrying, or causing or procuring or (being the owner)

permitting to be conveyed or carried, any animal in such manner or position as to cause that animal unnecessary suffering; (c) causing, procuring, or assisting at the fighting or baiting of any animal; (d) wilfully without any reasonable cause or excuse administering or causing or procuring or (being the owner) permitting the administration of any poisonous or injurious drug or substance to any animal; (e) subjecting or causing or procuring, or (being the owner) permitting any animal to be subjected to any operation which is performed without due care and humanity. An owner will be deemed to have permitted cruelty if he shall have failed to exercise reasonable care and supervision. The punishment is a fine not exceeding 25*l.*, or imprisonment not exceeding six months. It is provided that nothing in this section is to render illegal any act lawfully done under the Cruelty to Animals Act, 1876 (relating to vivisection), or shall apply (a) to the commission or omission of any act in the course of the destruction or the preparation for destruction of any animal as food for mankind unless such destruction or preparation is accompanied by the infliction of unnecessary suffering; or (b) to the coursing or hunting of any captive animal unless such animal is liberated in an injured, mutilated, or exhausted condition. Section 2 empowers the Court to order the destruction of any animal where the owner has been convicted of cruelty and the Court is satisfied that it would be cruel to keep the animal alive, but without the assent of the owner no order is to be made under this section except upon the evidence of a duly registered veterinary surgeon. Section 3 enables the Court to deprive a person convicted of cruelty to an animal of the ownership of the animal. Under section 4 compensation not exceeding 10*l.* to the person sustaining damage or injury may be ordered to be paid by any person for cruelty to any animal causing damage or injury to the animal or any person or property. Section 5 requires persons carrying on the trade of knackers to comply with certain regulations. Section 6 forbids any person licensed to slaughter horses from being horse dealers at the same time. Section 7 imposes on any person impounding any animal the duty of supplying it while so impounded with sufficient wholesome and suitable food and water, and enacts that the reasonable cost of the food and water supplied shall be recoverable summarily from the owner of the animal as a civil debt. Section 8 makes it an offence liable to a fine not exceeding 5*l.* (a) to sell, expose for sale, or give away any grain or seed which has been rendered poisonous except for *bonâ fide* use in agriculture, or (b) to knowingly put or place or cause any person to put or place upon any land or building any poison or any fluid or edible matter (not being sown seed or

grain) which has been rendered poisonous, but it is provided that in proceedings under paragraph (b) it shall be a defence that the poison was placed for the purpose of destroying rats, mice, or other small vermin, and that the accused took all reasonable precautions to prevent access thereto of dogs, cats, fowls, or other domestic animals. Section 9 forbids the use of dogs for purposes of draught on any public highway. Section 10 requires under penalty of a fine not exceeding 5*l.* any person setting or causing to be set any spring trap for catching any hare or rabbit to inspect or cause some competent person to inspect the trap at reasonable intervals of time and at least once every day between sunrise and sunset. Section 11 empowers a police constable finding any animal so diseased or seriously injured or in such a physical condition as to make it impossible to remove it without cruelty, to slaughter or procure the animal to be slaughtered on the certificate of a veterinary surgeon, and any expense may be recovered from the owner summarily as a civil debt. Section 12 relates to the powers of constables under the Act, and Section 13 obliges employers and owners to produce drivers or animals if so required where proceedings are instituted under the Act. Under Section 15 the expression "animal" is defined as meaning "any domestic or captive animal," and the expression "domestic animal" as meaning any "horse, ass, mule, bull" (which includes any cow, bullock, heifer, calf, steer, or ox), "sheep, pig, goat, dog, cat, or fowl, or any other animal of whatsoever kind or species, and whether a quadruped or not which is tame or which has been or is sufficiently tamed to serve some purpose for the use of man." A "captive animal" means "any animal (not being a domestic animal) of whatsoever kind or species, and whether a quadruped or not, including any bird, fish, or reptile, which is in captivity, or confinement, or which is maimed, pinioned, or subjected to any appliance or contrivance for the purpose of hindering or preventing its escape from captivity or confinement."

The Poultry Act, 1911 (1 and 2 Geo. 5 c. 11) has for its object the protecting of live poultry from unnecessary suffering. It enacts that orders may be made under the Diseases of Animals Act, 1894, for (a) protecting live poultry from unnecessary suffering while being conveyed by land or water and in connection with their exposure for sale and their disposal after sale, for (b) requiring the cleansing or disinfection of receptacles or vehicles used for the conveyance of live poultry. An inspector for the purpose of enforcing an order under this Act may examine live poultry under any circumstances to which the order relates and any receptacle or vehicle used for their conveyance, and may enter any vessel or

premises in which he has reasonable grounds for supposing that there are live poultry in course of conveyance or packed for conveyance. Poultry under this Act include "domestic fowls, turkeys, geese, ducks, guinea fowls, and pigeons."

The Revenue Act, 1911 (1 Geo. 5 c. 2), amends the Finance (1909-10) Act, 1910, in relation to duties on land values. Section 1 avoids contracts for payment of increment value duty by a transferee or lessee so that this duty must in all cases on the transfer or lease of land be paid by the transferor or lessor. Section 5 enables the Commissioners on the request of the owner of any pieces of land which are contiguous and which do not in the aggregate exceed 100 acres in extent to value those pieces of land together for the purposes of the Act, although those pieces of land are in separate occupation, if they are satisfied that in the special circumstances of the case it is equitable to do so. This provision may enable a landowner to escape undeveloped land duty where pieces of land when valued together do not exceed in site value 50% per acre, although a portion if valued separately might exceed that figure.

II.—DECISIONS OF THE COURTS.

1. *Labour.* The decisions of the year under the Workmen's Compensation Act, 1906, are again very numerous, and it is only possible to deal with a few of them which should be especially noted with reference to an employer's liabilities in respect of labour employed in agriculture. In *Hawkins v. Powell's Tillery Steam Coal Co.* (1911, 1 K.B. 250; 80 L.J.K.B. 769), in which the case of *Clover Clayton & Co. v. Hughes* (1910 A.C. 242; 79 L.J.K.B. 470) noted in the article on Contemporary Agricultural Law in the last number of this Journal at page 127 was distinguished, a workman employed in fairly light work was taken ill and went home and died the same day from angina pectoris. The medical evidence showed that angina pectoris might be brought on by several causes and might be due to circumstances which could scarcely be called an accident at all. It was held that, though as a matter of conjecture it was probable, it was not proved as a matter of legitimate inference from the facts that the death was due to accident "arising out of and in the course of the employment." As the applicants had not discharged the burthen of proof cast upon them of showing that the man's death resulted from his employment compensation for the death was disallowed. A case of injury arising from severe weather was dealt with in *Warner v. Couchman* (1911 K.B., 351; 80 L.J.K.B., 526). A journeyman baker while on his rounds in his employer's cart distributing loaves suffered injury in his hand and arm from

frost bite and claimed compensation under the Workmen's Compensation Act, 1906. It was held, without deciding whether there had been an accident within the meaning of the Act, that as there was no peculiar danger from cold to which the applicant was exposed beyond that to which a large section of the population whose occupation is out of doors is subject the injury could not be said to arise "out of the employment," and therefore he could not recover. This decision has since been affirmed by the House of Lords (1912, A.C., 35; 81 L.J.K.B., 45). In *Amys v. Barton* (28 Times L.R., 29) Amys was engaged in threshing on his employer's farm. While the work was in progress some of the other workmen saw wasps on the drum and at the back of the machine close to where Amys stood. The next day he had a swollen leg and complained of pain, and some days later he died from poisoning set up by a wasp sting. It was held that there was no evidence that the injury to the deceased arose "out of his employment," and that his widow was not entitled to compensation. A statement made by Amys to the doctor who attended him that he was threshing wheat and must have disturbed a wasps' nest, as wasps were about, and one stung him, was held inadmissible as evidence of the cause and occasion of the accident. *McLauchlan v. Anderson* (1911 S.C., 529) was a Scottish case under the same Act where a workman whose duty it was to load and accompany a train of waggons drawn by a traction engine while sitting on a waggon dropped his pipe. In dismounting to pick up the pipe he fell and was run over by the waggon. The Court held that, as he had a right in the course of his employment to leave the waggon and was doing a thing which a man while so employed might reasonably do, the accident arose "out of and in the course of the employment," and his wife and children were entitled to compensation.

2. *Stock*. In *Coaker v. Willcocks* (1911, 2 K.B., 124; 80 L.J.K.B., 1026) the decision of the Divisional Court noted in the last number of this Journal at page 129 on a question as to the right of impounding sheep on Dartmoor was confirmed. It was held that the defendant's obligation to fence a "new take" enclosed from the moor was not an absolute obligation to provide fences which would keep out any kind of sheep including those which like Scottish sheep possessed exceptional powers of jumping, but was only a limited obligation to provide such fences as were usual on Dartmoor to keep out the ordinary sheep of the moor. The defendant had therefore rightfully impounded the sheep found in his new take.

In *Titterton v. Kingsbury Collieries Lim.* (9 L.G.R., 405; 104 L.T., 569) the plaintiff, a farmer, claimed damages for the

loss of a heifer and a pedigree bull by sewage poisoning owing to the pollution of a stream called Thistlebrook by sewage matter. The defendants were colliery proprietors who had leased certain land belonging to them to Messrs. Moore, who erected on it a number of cottages for the accommodation of the defendants' miners. These cottages drained into sewage disposal works also erected by Messrs. Moore, and some of the sewage escaped into the Thistlebrook and caused the pollution in question. It was argued that the sewers had become vested in the local authority under Section 13 of the Public Health Act, 1875, and that they and not the defendants were liable for the damage caused to the plaintiff. The Court, however, held that as the defendants, the landowners, were exercising control over and managing the sewage works they were liable notwithstanding that the sewers had vested in the local authority. The damages were assessed at 50l.

There have been two interesting cases on the question of liability from accident caused by animals straying on the highway. In *Jones v. Lee* (28 Times L.R., 92) a young horse placed by the defendant in a field escaped on to the highway owing to a defective hedge. The plaintiffs were riding a tandem bicycle on the road and slowed down on seeing the horse. The horse turned round suddenly, ran across to the other side of the road and came into contact with the bicycle. Its fore legs were caught in the front wheel and it fell down. It then jumped up and lashed out injuring one of the plaintiffs and the bicycle. The plaintiff sued for the injuries thus caused by the horse. There was no evidence that the horse was vicious or in the habit of trespassing or attacking bicycles or persons on the highroad. It was held that the plaintiffs could not recover damages as it did not appear that the injury to the plaintiffs was the actual consequence of the defendant's negligence, the act not being one which it is in the ordinary nature of a horse to commit. Mr. Justice Bankes in the course of his judgment stated that at Common Law there is no duty imposed on an owner or occupier of land to keep his animals off the highway. *Ellis v. Banyard* (28 Times L.R., 122) was a case where a cyclist was injured by cattle on the highway and sued for damages. The plaintiff, about 10.30 p.m. on an August night, was bicycling along a road adjoining a field belonging to the defendant where some hundred cows were kept. She passed the gate and saw some of the cows coming out, and a little further on she saw some cows crossing the road. She slowed down to jump off, and according to her evidence was knocked down by the cows, one of which it was said stood upon her and broke her leg. It was proved that the gate was out of repair but no evidence was given as to who had opened

it. The Court of Appeal held that there was no evidence of negligence on the part of the defendant which would make him liable for the injuries caused. Lord Justice Buckley thought that the defendant was entitled to succeed on any one of three grounds: first that there was no obligation at Common Law on the part of a man who depastured cattle to prevent his cattle getting into the highway: secondly, that there was no evidence that the defendant left the gate open: thirdly, that even if there was an obligation on the defendant to keep the gate shut still it would remain to be proved that the animals were such as were likely to do damage on the highway, and there was no evidence that the cows were vicious animals. Lord Justice Vaughan Williams, however, did not go so far, and added that he did not think it was good law that a farmer was entitled to turn out untended cattle on pasture adjoining a highway without a fence, to such a number that they were likely to obstruct the highway by day or night without being liable to an action on the part of those who, using the highway, were injured by the obstruction. With these cases should be compared *Higgins v. Searle* (7 L.G.R., 640; 100 L.T., 280), decided in 1909 where it was held that in the absence of negligence a farmer was not liable for injuries to a motor car caused by his sow straying on the road, and it was said that an animal straying on the highway was one of the ordinary risks taken by persons using the highway. (See this case noted in Vol. 70 of this Journal at page 145.)

3. *Landlord and Tenant*. The case of *Re Kedwell and Flint* (1911, 1 K.B., 797; 80 L.J.K.B., 707) is of great importance on the question of the liability of a landlord to pay compensation for market garden improvements under the Agricultural Holdings Act, 1908, and the repealed Market Gardeners' Compensation Act, 1895. The Act of 1895 provides in section 4 that "where, under a contract of tenancy current at the commencement of this Act (January 1, 1896), a holding is at that date in use or cultivation as a market garden with the knowledge of the landlord, and the tenant thereof has then executed thereon, without having received previously to the execution thereof any written notice of dissent by the landlord, any of the improvements in respect of which a right of compensation or removal is given to a tenant by this Act, then the provisions of this Act shall apply in respect of such holding, as if it had been agreed in writing after the commencement of this Act that the holding should be let or treated as a market garden." The Agricultural Holdings Act, 1908, repeats this section in Section 42, Sub-section 2, but provides that in the case of a contract of tenancy current on January 1, 1896, where such tenancy was a tenancy from year

to year, the compensation payable in respect of an improvement comprised in the Third Schedule to the Act (*i.e.*, market garden improvements) should be such (if any) as could have been claimed if the Act had not been passed. The tenant held under a yearly tenancy, current on January 1, 1896. The property was at that date used as a market garden with the knowledge of the landlord, and the tenant had before and after January 1, 1896, executed thereon without having received written notice of dissent from the landlord, improvements in respect of which a right of compensation was given by the Market Gardeners' Compensation Act, 1895. The tenant Kedwell on the determination of her tenancy claimed for market garden improvements on the ground that she was entitled thereto under Section 4 of the Act of 1895, inasmuch as her tenancy was one current at the commencement of that Act. In opposition to her claim it was contended that her tenancy could not now be treated as one current on January 1, 1896, inasmuch as it was a yearly tenancy, and the Agricultural Holdings (England) Act, 1883, Section 61, provided that a tenancy from year to year under a contract of tenancy current at the commencement of the Act (January 1, 1884) should be deemed to continue to be a tenancy under a contract of tenancy current at the commencement of that Act until the first day on which either the landlord or tenant could, the one by giving notice to the other immediately after the commencement of the Act, cause such tenancy to determine, and on and after such day should be deemed to be a tenancy under a contract of tenancy beginning after the commencement of the Act, and that it was further provided by Section 1 of the Market Gardeners' Compensation Act, 1895, that it should be read and construed as part of the Agricultural Holdings (England) Act, 1883. It was therefore said on the landlord's behalf that the tenancy had ceased to be a "tenancy current at the commencement of the Act" on October 11, 1897, the earliest date on which, if notice to determine the tenancy had been given on January 1, 1896, it could have been determined. The Court of Appeal held that the landlord's contention was correct, as the provisions of Section 61 of the Act of 1883 as to a current tenancy must be read into the Market Gardeners' Compensation Act, 1895. The result is that it has been decided that a tenant from year to year who still holds under a contract of tenancy which was in force on January 1, 1896, a holding which was at that date used to the knowledge of the landlord as a market garden cannot in the absence of any express agreement that the holding should be let or treated as a market garden establish a right to compensation for market garden improvements (*e.g.*, planting of fruit trees, fruit bushes, strawberry plants, asparagus,

rhubarb, &c., and erection of buildings) executed by him or his predecessors in the same tenancy after the earliest day on which if notice had been given immediately after January 1, 1896, the tenancy might have been determined.

Another case under the Agricultural Holdings Act is *Cathcart v. Chalmers* (1911 A.C., 246 : 80 L.J.P.C. 143), where it was held in a Scottish case by the House of Lords that a clause in a lease by which the tenant debarred himself from claiming compensation for improvements by a claim made "later than one month prior to the determination of the tenancy" was inconsistent with the provisions of Section 2, Sub-section 2, of the Agricultural Holdings Act, 1900 (corresponding with Section 6, Sub-section 2, of the Agricultural Holdings Act, 1908) under which a tenant is entitled to claim at any time before the determination of his tenancy, and was therefore void as being a contract depriving him of his right to claim compensation. (See Section 5 of the Agricultural Holdings Act, 1908.)

In *M'Quater v. Fergusson* (1911 S.C., 640), also a Scottish case, a lease contained a provision by which the tenant was bound to apply to the land a certain amount of farmyard manure (25 tons of good farmyard dung) per acre, and so far as he had not sufficient farmyard manure for the purpose to make up the amount with artificial manure. On quitting his holding the tenant claimed compensation for the unexhausted value of artificial manure applied in terms of that provision. The landlord contended that the tenant was not entitled to claim compensation for artificial manure applied in accordance with the lease, inasmuch as he had received a "benefit" under Section 1, Sub-section 2, of the Agricultural Holdings (Scotland) Act, 1908 (corresponding with Section 1, Sub-section 2, of the English Act), in consideration for that improvement, viz.: the benefit of having to pay less rent under the lease in consequence of the manuring obligation. It was held that such an implied benefit was not a "benefit" in the sense of the section, and that the tenant's claim was accordingly good, the Lord President observing, "I think any benefit must be a benefit specially mentioned and allowed," and "I think you are there going into the region of speculation; whereas, I think, the Sub-section clearly applies not to a speculative question, but to the case where a particular benefit is mentioned as having been given in respect of a particular thing." In the same case it was held that the costs of a case stated to the sheriff (in England the county court judge) should be dealt with by him and not by the arbitrator under the Second Schedule to the Act, rule 14.

In *Herron v. Martin* (27 Times L.R., 431) the validity of a notice to quit was questioned. By an agreement a farm was

let to the defendants for a period of three years commencing March 25, 1907, and so on from year to year until the tenancy should be determined by either party giving to the other one year's notice in writing. On March 21, 1910, the landlords gave the defendants a notice to quit on March 25, 1911, and it was held that this notice was good notwithstanding that it was given before the expiration of the period of three years certain.

In *West v. Gwynne* (1911, 2 Ch., 1 ; 80 L.J.Ch., 578) it was held that Section 3 of the Conveyancing and Law of Property Act, 1892, applies to all leases whether executed before or after the commencement of the Act, and in the absence of any express provision to the contrary engrafts upon every covenant in any such lease against assignment or underletting by the tenant without the lessor's consent a proviso that no money shall be payable in respect of such consent. If a lessor refuses to give a consent except upon payment the lessee is relieved from obtaining his consent and can make a valid assignment or underlease without it. He is also entitled to bring an action for a declaration to that effect.

4. *Game*. In *Pratt v. Martin* (1911, 2 K.B., 90 ; 80 L.J.K.B., 711) it was held that the words "entering or being" upon land in "search or pursuit of game" in Section 30 of the Game Act, 1831, mean entering or being on such land personally, and a person who sends his dog on to land in search or pursuit of game, and shoots game put up by the dog, cannot be convicted under that section of trespassing in pursuit of game.

5. *Produce*. In *Wallis v. Pratt* (1911, A.C., 394 ; 80 L.J.K.B., 1058) the decision in the same case of the Court of Appeal (noted at page 134 of Vol. 71 of this Journal) was reversed. The appellants had purchased by sample from the respondents seed which was described as "common English sainfoin," and said to have been grown by Walker, of Alvescot. The appellants re-sold a portion of the seed as common English sainfoin, but when it came up it was discovered to be giant sainfoin which was inferior in quality to the English, lasting only about three instead of six, seven, or eight years. The appellants, on the mistake being discovered, paid the purchasers from them the difference between the value of the seed sown and that of common English sainfoin. The sold note from the respondents to the appellants contained a condition "Sellers give no warranty express or implied, as to growth, description, or any other matters." The House of Lords held that the appellants were entitled to be repaid by the respondents the amount of the difference in value, notwithstanding the clause as to no warranty, there having been a breach of an implied condition that the goods should correspond with the description of common English sainfoin, which the purchaser was entitled,

under Section 11 of the Sale of Goods Act, 1893, to treat as a breach of warranty and recover damages accordingly.

There have been several cases relating to the sale of milk. In *Hellwell v. Haskins* (9 L.G.R., 1060 ; 75 J.P., 435) an inspector watched the respondent, a vendor of milk, whilst in the street outside a customer's house pour milk into her jug from his can and receive payment for it. He saw the purchaser carry the jug indoors and shut the door. He knocked, and in about three minutes from the time when the milk was taken by the purchaser obtained it from her in the same condition as that in which she had taken it from the milk vendor. Upon analysis the sample showed 30 per cent. of added matter. The Court (Lord Alverstone, C.J., dissenting) held that the vendor could not be convicted under Section 3 of the Sale of Food and Drugs Amendment Act, 1879, as the sample had not been obtained "in course of delivery" as required by that section. In *Lamont v. Rodger* (1911, S.C. (J.), 24) a farmer was accused of selling milk which was not genuine under the Sale of Milk Regulations, 1901, which provide that where a sample contains less than 3 per cent. of milk fat it shall be presumed "until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk fat, or the addition thereto of water." He gave evidence himself, and called his mother and his farm servant as witnesses, who all denied that the milk had been tampered with. It was proved that he had no separator. It was held that the onus of proof imposed by the Regulations on a person accused of selling milk which was not genuine had been sufficiently discharged by the evidence he had offered, and that it was not necessary for him to have the corroboration of a neutral witness or witnesses. In *Dairy Supply Co. v. Houghton* (28 Times L.R., 94) the appellants, wholesale dealers in milk, who purchased their milk from farmers in the country, were charged with having given to a purchaser from them a false warranty in writing as to milk in respect of which the Public Analyst had reported that it was deficient in milk fat. The milk in question was received from a farmer with whom the appellants had dealt for three years, and during that time nothing had occurred to lead them to suppose the milk was not of the proper standard. The farmer had given the appellants a warranty with the milk. It was held on appeal from a conviction that the appellants had proved that when they gave the warranty they had reason to believe that the statements contained therein were true within Section 20 (6) of the Sale of Food and Drugs Act, 1899, notwithstanding that they had not tested any part of that particular consignment. The conviction was therefore quashed. In *Jenkins v. Thomas* (9 L.G.R., 321 ; 104 L.T., 74) the Haverfordwest Town Council, in pursuance of the Markets

and Fairs Clauses Act, 1847, had adopted certain tolls "on goods, provisions marketable commodities, and articles brought into the borough market for sale or exposure for sale." These tolls included a toll of 6d. "for every cart containing milk, fish, or other goods, provisions, marketable commodities or articles." A dairy farmer living outside the borough without paying toll sold milk from a cart at houses within the borough of certain regular customers and was prosecuted for unlawfully selling milk within the prescribed limits. It was held that although the milk was sold within the prescribed limits the farmer could not be convicted as the toll prescribed was not a toll upon the sale of milk, but a toll in respect of space occupied by the cart in the market.

6. *Miscellaneous.* There have been several interesting cases having a bearing upon agriculture which may be referred to under this head.

In *Cook v. Hobbs* (1911 K.B., 14; 80 L.J.K.B., 110) the appellant was a farmer and rope-maker, and the question was whether a two-wheeled cart belonging to him was exempt from carriage licence duty being a "vehicle, which is constructed or adapted for use, and is used, solely for the conveyance of any goods or burden in the course of trade or husbandry." (See Customs and Inland Revenue Act, 1883, Section 4, Sub-section 3). On the occasion in question he used it for the purpose of driving his wife and son to market at Barnstaple in order that they might serve at two stalls there at which he sold ropes and farm produce. At other times he used the cart to deliver ropes to customers, to convey calves and sheep, and to take ropes and farm produce to market at Barnstaple and South Molton. The justices found that the cart had been constructed and used solely for the conveyance of goods and burdens in the course of trade or husbandry, and that the appellant's wife and son were "burden" within the meaning of Section 4, Sub-section 3, of the Customs and Inland Revenue Act, 1888, but that it was capable of being used for other purposes such as the conveyance of persons only or of dogs or game for sport, and was therefore not within the exemption. The Court of King's Bench allowed the appeal, agreeing that the justices were entitled to find that the wife and son were "burden," but holding that the fact that the cart was capable of being used for other purposes than trade or husbandry did not render it liable for duty if it was constructed and used solely for the conveyance of goods or burden in the course of trade or husbandry.

Strutt v. Clift (1911, 1 K.B., 1; 80 L.J.K.B., 114) was another case relating to the carriage licence duty. The appellants were convicted of keeping a carriage without a licence. They were dairy farmers who owned and occupied

but did not reside on a farm in Essex which was managed for them by a bailiff under the superintendence of a steward who resided a considerable distance away. Part of the business of the farm was the conveyance of milk to the railway station, and for this purpose the appellants had a four-wheel van which was usually driven to and from the station by a milkman. The van had the appellants' names painted on the side and was constructed or adapted for use for the conveyance of milk churns. On one occasion without the knowledge of the appellants or their steward the bailiff used the milk van after carrying milk to the station for bringing back his wife and others from a place of entertainment. In respect of this user the appellants were convicted of keeping and using the milk van without having a licence. The Court held that the conviction was right on the ground that the van had not been "solely" used for the conveyance of goods or burden in the course of trade or husbandry, and the fact that the user for a non-exempted purpose was without the knowledge of the appellants did not entitle them to exemption from the duty.

The Fertilisers and Feeding Stuffs Act, 1906, which renders any person who sells any article for use as food for cattle and fails without reasonable excuse to give on, or as soon as possible after, the delivery of the article the invoice required by the Act stating the composition, &c., of the food liable to a penalty, has been the subject of a decision. The Act requires that a prosecution for an offence under the section relating to the invoice shall not be instituted without the consent of the Board of Agriculture and Fisheries. In *Hill v. Phoenix Veterinary Supplies, Lim.* (1911 2 K.B., 217; 80 L.J.K.B., 669) the Department of Agriculture and Technical Instruction for Ireland instituted a prosecution against the respondents for delivery, for use of food for cattle, of 1½ cwt. of calf meal artificially prepared without an invoice as required by the Act. No consent to the prosecution had been given by the Board of Agriculture and Fisheries, and it was therefore held that the prosecution failed, as being in England the consent of the English Board was required notwithstanding that the Irish authority was the prosecutor.

Two cases relating to highways should be noted. In *Re Stamford and Warrington's (Earl) Settled Estates* (1911, 1 Ch., 698; 80 L.J. Ch., 361) it was held that a rural district council may agree with a landowner who is liable to repair a road *ratione tenuræ* (i.e., where a liability to repair is imposed upon the land through which the road passes) to for ever take upon themselves the repair and maintenance of the road in consideration of a payment by the landowner, and the effect of the agreement will be to effectually free and for ever discharge.

the land which is subject to the liability and the owner and occupier from the liability. In *Carshalton Urban Council v. Burrage* (1911 2 Ch., 133; 80 L.J. Ch., 500) there was an old chalk pit of considerable depth near a public road but with a narrow strip not exceeding in the narrowest places 14 ft. intervening between it and the highway. It was entirely unfenced and dangerous to those using the road. It was held that notwithstanding the intervening strip of land the chalk pit was "adjoining or abutting" on the public highway within the meaning of Section 30 of the Public Health Acts Amendment Act, 1907, and the owner was therefore compellable to erect at his own expense a fence to prevent any danger to persons using the highway.

The right of an owner or occupier of land to do acts necessary to protect his land from injury has been dealt with in two cases. In *Cope v. Sharpe* (1911 2 K.B., 837; 80 L.J.K.B., 1008) the tenant of sporting rights was held entitled to adopt such measures, on the land on which his rights extended, for extinguishing a fire with which it was threatened as might in the circumstances be necessary for the preservation of his sporting rights, the means adopted in the case being the setting on fire of patches of heather to the leeward of the fire so that when it spread to those patches it should be checked for want of fuel. Much the same principle was applied in *Greyvensteyn v. Hattingh* (1911 A.C., 355; 80 L.J.P.C., 158) where a farmer in the Cape of Good Hope whose land was threatened with locusts trespassed on his neighbour's land and drove the locusts back on to the cultivated portions thereof with the object of protecting his own land. It was held that he was entitled to repel the danger threatening his property even though the result might be to transfer the danger and consequent mischief from his own to his neighbour's property. Happily locusts are not a danger in this country, but the principle would apply to other forms of danger such as an extraordinary flood which is seen to be coming and against which an owner or occupier might seek to protect himself at the expense of his neighbour's property.

The question of the compensation to be awarded to a landowner from whom land is compulsorily purchased by a county council for the purpose of providing small holdings under the Small Holdings and Allotments Act, 1908, was considered in *Re Carlisle's (Earl) and Northumberland County Council's Arbitration* (10 L.G.R., 50). The land had valuable minerals underneath it which were not acquired by the County Council, and the question was whether the compensation to the landlord ought to be assessed on the footing that there was a risk of subsidence when the minerals came to be worked. It was

held that this risk ought not to be taken into consideration by the arbitrator because the Legislature by incorporating Sections 77 and 78 of the Railway Clauses Consolidation Act, 1845, in the Small Holdings and Allotments Act, 1908, had enabled the council to require at any time that the minerals shall be left unworked on payment of further compensation. The compensation to the landowner was therefore the value of the surface of the land calculated as if there were no minerals to be worked beneath it and therefore no risk of subsidence.

Two celebrated cases under the Finance (1909-10) Act, 1910, remain to be noticed. In *Dyson v. Attorney-General* (28 Times L.R., 72) it was held that a form issued by the Inland Revenue Commissioners which requires *inter alia* a person who is the owner and occupier of land to state the annual value of such land is not warranted by Section 26, Sub-section 2, of the Act, and the insertion of that requirement in the form served invalidates the whole form. In *Burghes v. Attorney-General* (28 Times L.R., 72) it was held that the powers of the Commissioners of Inland Revenue, under Section 31, Sub-section 1 of the Act, to require persons paying or receiving rent of land to furnish the names and addresses of persons to whom they pay rent or on behalf of whom they receive rent, as the case may be, are confined to requiring information in reference to particular parcels of land specified by the Commissioners. A general inquiry is unauthorised. The same cases also decided that a form requiring information to be given under penalty within less than thirty days from the service of the notice is invalid.

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FORECASTING WEATHER.¹

A BOOK on Weather Forecasting by no less eminent an authority than the Director of the Meteorological Office, deserves, and will probably receive, a cordial reception at the hands of the public. Within recent years much has been done in the way of familiarising the ordinary unscientific individual with the principles of modern weather knowledge. At a large and increasing number of public and secondary schools the subject has been added to the ordinary curriculum, the interest of the pupils being stimulated by actual practice in the taking of meteorological observations. By popular lectures and by newspaper

¹ By Dr. W. N. Shaw, F.R.S., Sc.D., Director of the Meteorological Office (Constable & Co.).

articles (the latter not always of a very profound or reliable character), the attention of the public is frequently drawn to a subject of every-day concern, so that even the man in the street has begun to show an intelligent appreciation of the workings of the thermometer, the rain-gauge and the sunshine recorder. In spite of all such efforts there are, however, myriads of people who have no conception of the rules upon which the daily weather forecasts are based, and it is to be feared not a few who imagine that there is some connection between the operations of the prophet and the spinning of a coin. Any one who will take the trouble to read but a few chapters of Dr. Shaw's book will at once see that, in spite of failures, due to serious limitations in the existing knowledge of the subject, the official weather forecaster proceeds upon strictly scientific grounds, and that the infinite variations in the weather are regulated by law in very much the same way as any of the other ordinary operations in nature.

Without a chart the forecaster would be more helpless even than the mariner; and the opening chapter of Dr. Shaw's book is therefore devoted largely to a description of the synoptic weather chart, and the methods by which it is prepared. Every morning reports of the state of the weather are received at the Meteorological Office by telegraph from 29 stations in the British Islands, 31 on the Continent, and 7 in the Atlantic islands of Iceland, the Faeroe, the Azores, and Madeira. As soon as each report arrives the reading of the barometer and thermometer and the state of the wind and weather are inserted in proper geographical position on a blank outline map. When the map is fairly complete lines are drawn connecting all places or positions in which the barometer stands at the same level, and, as a result, the forecaster sees at a glance in which locality the barometer is high, and in which regions it is low, the other observations showing the weather conditions which prevail in the neighbourhood of the various systems of high and low pressure. After comparing one weather map with another, say for the previous morning or evening, the problem which lies before the forecaster is to form a mental picture of the chart as it is likely to appear at the close of another twenty-four hours—or in other words to decide as to the nature of the changes which will take place in the conditions of barometer, wind, and weather. Bad weather is always associated with what are known variously as cyclones, depressions, or areas of low barometrical pressure. Fine weather of anything like a prolonged character is due to the presence of anti-cyclones or areas of high barometrical pressure. The opposing systems are usually in motion, those of the former class moving with more or less swiftness, the latter far more slowly, and remaining in fact not

uncommonly in one position for many days together. When the forecaster sees upon the chart say a cyclone or depression which has arrived from the Atlantic, his business is to determine in which direction it will move, and whether its progress will be fast or slow. The accompanying winds and weather are subject to occasional modification, but are sufficiently constant to enable a successful forecast to be made in the large majority of cases in which the depression has obediently followed the course anticipated. In cases of hopeless failure it may be at once assumed that this has not happened. Sometimes the travelling weather system goes off in a direction that was not at all expected, and in other instances it moves much faster or slower, the result in either case being seen in a partial, and not infrequently, a total failure of the prediction issued.

One or two of the chapters in Dr. Shaw's work are likely to appeal to the scientific student rather than to the general reader, but there is very little matter presenting any real difficulty to persons of ordinary intelligence. The section on types of weather explains why one particular class of conditions will often prevail with slight variations for many days, or even for weeks at a stretch. Another interesting chapter deals with local variations in the weather, and shows that in very many instances forecasts which are prepared, as at present, for large districts are often justified by the conditions prevailing in one part of the district, and entirely falsified by the weather experienced a few miles away. Another chapter is devoted to the system of storm warnings which prevails in this country, and yet another to the difficulties existing in the way of successfully forecasting fogs and thunderstorms.

The sections of the work which are likely to appeal most forcibly to the agriculturist are, however, those entitled "Agricultural Weather Forecasts" and "The Practical Utility of Weather Forecasts." In order that these portions of the subject may be brought fully and fairly to the notice of the readers of this Journal, we have received from the author generous permission to quote freely from the pages of the book.

One of the most serious difficulties with which the farmer and the fruit grower have to contend is the occurrence of severe spring frosts, resulting at times in the complete destruction of many acres of promising crops. In the section dealing with this very important subject, Dr. Shaw remarks:—

"The frosts which occur in spring are specially destructive on account of the sensitiveness of young plants, and it is, therefore, desirable to recognise the conditions under which they are likely to occur, and if possible, to take precautions for the protection of young growth.

"As measured by instruments, the weather is not much more changeable during spring than it is in winter or summer, but the changes are of greater practical importance. The change of shade temperature, for example, from

45° to 25° in the spring is much more destructive than a change from 35° to 15° in winter, or from 80° to 60° in summer.

"Destructive frosts in spring may arise from three separate causes, and on occasions two of these causes may combine."

"The first is the occurrence of an ordinary type of cold, wintry weather. The barometer falls with a northerly, north-easterly or easterly wind, and we get, in consequence, a cold spell, probably with snow."

"The second of the two causes is noticable in changeable April weather, and may be referred to the passage of barometric depressions. If the barometer and wind are watched, it will be noticed that after rain, with a falling barometer and a southerly or south-westerly wind the wind veers to the west, north-west, or north, and becomes apparently drier, and the weather clears and becomes cold. If this change happens towards evening, and the wind drops when the sky clears, a frosty night is almost certain."

"The third recognised cause refers especially to night frosts, which may occur with destructive effect if the night is clear (even after a warm sunny day), and the destruction is the more complete if the day which follows the cold night is itself sunny and warm. The most destructive frosts occur when the causes here noted as the second and third combine, when cold, clear weather with a calm night comes at the close of a boisterous day, with a veering of the wind to the north-west or north."

"We may consider a little more in detail the process by which the cooling takes place on calm, clear nights. Over our Midland Counties in April there is on the average a difference of 16·3° between the highest temperature of the day and the lowest temperature of the night. In May the difference amounts to 17·7°. During clear weather the day temperature is increased by the warm sunshine, but the night temperature is lowered. After the sun is gone, when the earth and its covering herbage are exposed to a clear sky, they lose heat and get colder than the air. They may cover themselves with dew or hoar frost, which are a sure sign of their having been cold. But in turn they cool the air next to them, and the cooled air in its turn trickles like water down hill to the valleys."

"In these circumstances the plants on the tops of the hills are fortunate, for the air which replaces that which has been cooled and trickled away is practically part of the original undisturbed supply, and is comparatively warm. The plants on the hill side get the air which trickles down from above, and is consequently colder than that enjoyed by the plants at the top. The cooling goes on as the air flows down to the valleys. But the worst fate awaits the plants in the valleys where pools of cold air form. Thither the coldest air gravitates, and for the plants at the bottom the air is stagnant, consequently they may cool by exposure to the open sky much in the opposite way to that in which a joint roasts in a 'hastener' before a fire. The shape of the ground which causes a pool of stagnant air to form takes the part of the 'hastener.'"

"The effects of this process of cooling may be very different in situations which are quite near to one another. Meteorologists are accustomed to note such effects by having one thermometer 'on the grass,' supported on a couple of forked twigs close to the ground, and another 'in the screen,' which means that it is kept in a louvered box at a height of four feet from the ground. On calm, clear nights the effect of the protection of the screen is very striking. The differences are not altogether due to enclosure in a screen; the height of the screen above the ground has something to do with it because the trickling stream of cold air keeps to the ground, and is not often very thick."

"The following conclusions regarding the distribution of temperature during frosts on calm nights are well established:—

"(a) The frost becomes more severe as one goes from the hills down to the valleys, and hollows on the hillsides are colder than the more exposed parts."

"(b) The frost is most severe on the ground, and becomes less severe at shrub height, still less so at tree height; so that herbage and low shrubs may be destroyed when higher shrubs and trees are spared.

"(c) An overcast sky or a light wind generally prevents ground frosts.

"It is also a well established meteorological fact that on the average wind falls off in the evening, and in settled weather a calm night often follows a day with a good breeze. This is especially the case with an easterly wind.

"Referring to the three causes which conduce to the production of sharp night frosts, the first two are easily associated with general meteorological conditions over the country, and to anticipate them forms part of the ordinary duty of weather forecasting. The changes are often very sudden, and while it is as a rule possible to anticipate their general character, it is less easy to form an estimate of the intensity of the changes. The difference between the changes which produce only a chill, and those which cause a frost, is not indicated on the maps used for forecasting.

"The frosts of calm nights are still more difficult to deal with by forecasts issued from a central office. They are subject to the effects of local peculiarities of site and circumstances, of which account can only be taken by those who are on the spot. A light air, hardly strong enough to be called a wind, will keep away a night frost by preventing stagnation; a calm, on the other hand, favours frost; but from the point of view of the weather-forecaster the calm may be an artificial calm due to surrounding trees or buildings, and not at all due to what he would understand by the weather.

"It has already been pointed out that situation, whether on a hill or hill-side, or a valley, is also of importance. It is, therefore, necessary that persons interested in protecting their crops from frost should make use of their local knowledge in extension of the information to be obtained from forecasts.

"One of the best aids to the use of local knowledge is the regular study of weather maps. The Meteorological Office issues daily charts of the weather over the British Isles and North-Western Europe, which can be had by any one on payment of the cost of postage and covers (1l. per annum), and the conditions for the occurrence of frosts can be watched much more effectively by an examination of the daily map than by the mere consultation of the forecast which is drawn up for a whole district, and must be limited to about a dozen words.

"Further information about the probability of a night frost may be got from local observations of the temperature and humidity of the air, the readings of the dry and wet bulb thermometer. From these readings on any occasion the so-called "dew point" of the air can be computed. The dew point is the temperature at which dew begins to form.

"Destructive frosts on calm nights are far more likely to occur when the air is dry; that is when the dew point is far below the air temperature, or the wet bulb is far below the dry, than on nights when it is moist or the dew point and wet bulb temperatures are near the dry.

"From what has been said above, it will be gathered that any one who is interested in protecting his crops from night frosts, and, therefore, wishes to know beforehand when frosts are likely to occur, will do well to study:—

"(1) The peculiarities of his locality to know whether from being in a cup or valley, it is especially liable to frosts on calm nights.

"(2) The daily charts, with or without forecasts by telegraph, in order that he may recognise the meteorological conditions in which the weather is likely to become cold or calm.

"(3) The readings of the dry and wet bulb thermometers, so that he may recognise the occasions when ground night frosts are likely to be severe on account of the dryness of the air.

"The best method of protection for young plants against night frosts is to cover them up and thereby prevent first of all the loss of heat, and secondly the access of cold air.

"Other means of protection have been tried. Saturation with water of the ground in which the plants are growing is resorted to in fruit plantations in California. Possibly the evaporation of the water is in itself a protection, as it promotes the formation of a mist over the land to be protected, but the warmth of the water itself no doubt also acts to prevent the air just above it being cooled as much as it would have been if the ground had been dry. On the other hand Continental writers point out that delicate plants are more sensitive to the effects of frost when their cells are fully charged with water than when they are in a dry condition, and then the adoption of this method, though mitigating the intensity of frost, may lead to increased damage to the crop. Possibly differences in the character of the crops to be protected, more particularly the heights of the sensitive parts above the ground, may account for the apparent difference of opinion. On occasions when there is an appreciable breeze saturation of the ground is probably harmful, as it would promote increased evaporation, and so lead to cooling while the protecting mist would be dispersed by the breeze as rapidly as it was formed. 'Smudging,' i.e. covering the area with smoke from the combustion of damp straw or other smoky fuels, has been recommended as a protective measure, and the experiments have given rise to some discussion.

"Vegetation suffers most when the plants are rapidly warmed by the sun after being exposed to frost, so that protection is useful in the early morning when the sun is rising."

Dr. Shaw's remarks on the "Practical Utility of Weather Forecasts" are also worthy of serious attention. He says:—

"Any one receiving a telegraphic forecast for the first time hardly knows what to do with it. He looks at the sky and ransacks his own experience; if his habitual prognostics support the forecast he will act upon it; if they are in conflict with it he can hardly trust himself to the inferences drawn from premises unknown to him by persons who do not live out of doors or otherwise share his experience. In the end he is almost sure to be guided by his own experience, and then indulge in a judgment *ex post facto* upon his wisdom in having so determined.

"The fact is that the effective use of telegraphic forecasts requires practice, and it also requires co-ordination with the prognostics, general or local, with which the user is familiar. Supposing that we could re-arrange the practice of forecasting so as to give in the evening the weather anticipated for the period 6 a.m. next morning to 6 a.m. on the following morning, and in the morning the weather from the approaching midnight to midnight next evening, or even from 6 p.m. to 6 p.m.; and if the percentage of accuracy could be kept up to its present figure, there is no doubt that the recipient who always acted upon the forecasts would find them, on the average, of effective utility, and the utility could be very greatly enhanced by the consideration day by day by some person of special knowledge on the spot of the relation of the forecasts to actuality, the reasons for success and failure, and the preliminary signs of the commencement and sequence of the changes anticipated. This development requires a local knowledge of the principles of forecasting by means of weather charts, which might form part of a rural education. A well-informed correspondent in possession of the general inferences could probably give a local forecast that would be better applicable to the particular district than the general official forecast.

"Until such a development is possible we cannot be said to have a 'system' of forecasting, and a judgment as to the utility of our forecast practice gives no adequate information upon the progress of the subject from the scientific point of view.

"After what I have said it is not surprising that the reports which we get about the application of forecasts deal more with their accuracy than with their utility. Correspondents who receive the harvest forecast by telegram,

and who are always invited to supply notes of the weather which enable us to check the accuracy, frequently report that the forecasts were remarkably accurate, but they seldom go as far as to say that they were acted upon with advantage. Occasionally I have learned that persons acting upon the forecasts have saved themselves from difficulties which were otherwise unforeseen.

"In recent years the Office has endeavoured to meet the special requirements of farmers by supplying notices of the prospect of settled weather that might be utilised for getting in hay or corn crops. Very enthusiastic acknowledgment of the utility of these forecasts has been expressed in terms of hundreds of pounds by an agricultural firm in Cornwall.

"For the dwellers in cities life is so organised that the variations of weather seem to be of little importance, and a forecast tends to be a matter of curiosity verging on the important as the week draws to its end. The means of transport on land and sea have been so greatly improved and developed as to give the impression of being independent of the weather. This attitude, which is justifiable with certain limitations, sometimes finds expression in various ways. A post-office official once told me that a knowledge of to-morrow's weather would be of no utility to the rural postal service, because His Majesty's mails had to be carried whatever the weather might be. The dwellers in cities often forget the conditions under which the supply of the daily necessities of life, as milk, meat, or vegetables, is carried on, and the extent to which the proper ordering the supply is contingent upon the weather. Our feeling of independence of the weather is sometimes sadly shocked by the paralysing influence of a snowstorm or a fog, and we are forcibly reminded that it is not only the health resort that is interested in to-morrow's weather.

"It is in connection with agriculture and the supply of the necessities of life that the work of forecasting should find its application. For the excursionist and the holiday-maker the uncertainty of to-morrow is really part of the interest. So much is the holiday-maker disposed to look upon the brighter side of things, that it is not at all improbable that, if we could describe to-morrow's weather exactly, with all its dripping accuracy, some protests would be raised against the publication of the information as interfering with business. But with the agricultural world it is different. They are not by nature so optimistic. It would be a matter of great interest to know the actual yield of farm produce each year, estimated as a percentage of the maximum possible under the most favourable circumstances of weather, and by how much a promising result is spoiled by bad weather. The destruction of lambs by heavy snowstorms, of fruit and potatoes by late frosts, the shortage of hay or roots for want of water, and the loss of crops by inclement harvest weather, all put together would total up to a large percentage and a vast sum of money. To these must be added the loss or depreciation of live stock or perishable goods in consequence of rough weather, or delays in transit, or the overstocking of the market in bad keeping weather. With a life-long experience of a heavy percentage of inevitable losses it is little wonder that the farmer should take a philosophic view of the situation. If he is to lose something like 40 per cent. it seems hardly worth while to trouble about a margin of 1 or 2 per cent. But the difference might easily reach a figure that would convert a loss on the year into a profit, and whatever is gained by improving our knowledge of the weather is so much to the good, even though it be not the whole, so that there is certainly a golden opportunity for successful forecasts of weather.

"Since their introduction fifty years ago the use of synoptic charts has enabled us to make certain definite advances, and the success which has been achieved is sufficient to encourage us to pursue the researches further. It may be that in the end the caprices of weather will after all disappoint us and to-morrow's weather will never be forecasted with sufficient accuracy for all practical purposes. Even in that case the effort will not have been valueless. It is quite possible that the progress of research, guided primarily by the wish to improve the daily forecast, will lead to the recognition of, or find material

for, the development of laws of a more general character that will enable us to anticipate the weather for the season or the month. It is only by close practical study that such an object can be achieved."

In conclusion we would heartily recommend the book to any who wish to obtain a thoroughly reliable and up-to-date guide as to the progress of modern weather knowledge. The work should most certainly be included in the library of every school or college, and most especially of those in which the subject now forms a part of the ordinary course of instruction. In the introduction to the work, Dr. Shaw modestly disclaims the possession of any large experience in the actual work of daily weather forecasting, and points out that his position has been mainly that of an onlooker. He, as modestly, omits to add that if any advances have been made in this country within recent years they have been due in a large measure to his own guidance and advice. We are not deviating one atom from the truth when we remark that a substantial portion of the material included in the present work could not have been written eleven years ago when the present director of the busy Government department at South Kensington assumed the reins of office.

One may add that Dr. Shaw's book is admirably produced. The printing is bold and clear, and the numerous illustrations afford much assistance to the reader, notably in the more advanced sections of the work, where such assistance is especially needed.

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THE NORWICH SHOW, 1911.

THE year 1911 opened for the Royal Agricultural Society under exceptionally favourable auspices, with His Majesty The King at its head as President. The Annual Show at Norwich was, in many ways, the finest, most comprehensive, and certainly one of the most notable that has ever taken place in the long period of seventy-two years since the doors of the first "Royal Show" were opened at Oxford in 1839. The week following His Majesty's Coronation afforded an opportunity for many of the distinguished personages gathered together at that time from the four quarters of the globe to visit the Exhibition of the premier Agricultural Society of England in one of our most important agricultural counties, and one in which King George himself is a landowner, farmer, and stockbreeder.

The Society has twice previously visited the Cathedral City, first in 1849, sixty-two years ago, and on a second occasion in 1886, since which time a quarter of a century

has elapsed. The magnificent collections, each the best of its kind, of machinery, implements, live stock, &c., thus brought to their doors cannot therefore have failed to have had a stimulating and educational influence upon the agricultural population of the district, who supported the Show in large numbers during the week, particularly on the Thursday, the first shilling day.

In the table set out below are collected together for comparison, particulars as to the entries, admissions, &c., at the three Shows held at Norwich.

Year	President	Imple- ments entered	Entries of live stock	Number of persons admitted	+ = Profit - = Loss
					£
1849	Earl of Chichester	1,882	624	Norecord	- 1,958
1886	H.R.H. Prince of Wales	4,656	1,823	104,909	- 1,082
1911	H.M. The King	5,278	2,948	121,405	- 532

The Show of 1849 was open to the public for two days, and—although no official record exists of the actual attendance—a local newspaper has it that “over twenty-two thousand people visited the show,” among the guests being the Duke of Cambridge, who was entertained by the Mayor, Mr. (afterwards Sir) Samuel Bignold. On that occasion, the eleventh annual country meeting of the Society, the East Anglian implement makers were in strong force. The display in their department was more extensive than ever before, and improvement in general principles and construction had never been so marked. This was particularly observable in steam engines, carts, and waggons. By this time, through the trials which had been conducted annually, the Society had gained the confidence of the farmer, who, when selecting implements, gave preference to those which had gained the Society’s mark of approval.

The 1886 Show took place at Crown Point under the Presidency of the Prince of Wales (King Edward the Seventh). His Royal Highness was most active in the performance of the duties of his office, attending regularly the meetings of the Council in London, and inspecting the showyard during its preparation. He was also present at the Show on three occasions, twice being accompanied by the Princess of Wales (Queen Alexandra). The total number of entries of live stock at this Show (1,823) was considerably larger than at any Show subsequent to the International Exhibition held in 1879 at Kilburn, and those exhibited were far above the average.

When it was definitely decided that the national Society should visit Norwich in 1911, the Royal Norfolk Agricultural Association at once agreed to abandon their annual exhibition for the year, and in addition, subscribed most generously to

the local fund. In exchange, the Members of this Association were accorded privileges in connection with the Show similar to those enjoyed by the Members of the Royal Agricultural Society. Privileges were also granted to the Members of the Suffolk Agricultural Association, which body also made a contribution to the local fund.

Through the good offices of Mr. Russell Colman, the Society were again favoured with the use of the beautiful park at Crown Point, which had been generously placed at their disposal in 1886 by the present owner's father, the late Mr. Jeremiah Colman. The actual area of land enclosed was 150 acres; exhibits occupying 108 acres, the remainder representing the shooting and other plantations which, situated as they were in different parts of the ground, gave the Showyard an unusually picturesque appearance. The main entrance was at the western end of the site near the Whitlingham Lane, with the Implement section as usual arranged on that portion of the ground to which the entrance gave immediate access. At the southern side of the Implements the Horticultural, Forestry, and Agricultural Education sections were placed. The three Pavilions (Royal, Stewards, and Members) were in their usual place in the centre of the ground, and beyond these was the Large Ring. At the rear of the Pavilions and Grand Stand was a plantation, a pathway through which led up to a plateau on which were housed the horses and sheep. Cattle occupied the space facing the Pavilions, and the Pig pens filled the extreme eastern end of the site.

The setting out of the Showyard, in consequence of the positions of the different woods and rows of trees, was a task of no small difficulty, and while every endeavour was made by the Allotment Committee to allocate the stands satisfactorily, in certain instances exhibitors considered that they were not so well placed as they could have wished.

A word may appropriately be said here as to the most excellent arrangements made by the Great Eastern Railway to cope with the enormous goods, live stock, and passenger traffic arising out of the Show.

Close to the Showyard entrance a special station for passengers was constructed, and extensive dock and platform accommodation was provided for dealing with the live stock and heavy implement and machinery traffic. Sleeper roads and paths over a considerable stretch of meadow land were laid down, a bridge for both pedestrians and vehicles was thrown over the river Yare, and an overline footbridge for passengers at the Wensum Junction station was also put up. Another footbridge constructed over the main line gave access to the

new pathways, which considerably shortened the distance for visitors coming from Norwich on foot.

Everything in connection with the transit of exhibits and visitors, thanks to the excellent organisation of the railway officials, was performed with the greatest celerity, and in the smoothest possible manner, and no company has done more to earn the thanks of the Society than the Great Eastern Railway, whose efforts were gratefully acknowledged by the Governors and Members in a resolution passed at the General Meeting in the Showyard.

Unlike the shows of the last few years, that at Norwich opened on a Monday, June 26, and closed on the following Friday, June 30. All the exhibits being in the Yard on the Sunday, the custom of holding Divine Service in the large tent was revived. The sermon on this occasion was preached by the Bishop of Norwich, and a large number of the attendants on the live stock and also representatives of the Council were present.

The weather—which on the preceding Saturday and Sunday was exceedingly wet—showed signs of relenting when the gates were opened on Monday morning, and, although the day was cold and showery, there were occasional periods of sunshine. As usual the chief business of the first day was the judging.

Several of the Colonial Ministers of Agriculture—who had been specially invited to the Show—were early visitors, and these gentlemen were taken round the Show by the Hon. Cecil Parker, who performed the duties of Reception Steward during the week.

Other visitors on the opening day were a party of some sixty members of the Netherlands Agricultural Society, who, after spending two or three days at the Show, subsequently paid visits to typical farms in East Anglia.

Arrangements were made for a visit on Monday of a large party of native officers and men of the Indian Army in this country in connection with the Coronation, but, at the very last moment, circumstances arose which compelled the authorities to cancel the arrangements.

A luncheon was given in the Showyard by the High Sheriff of Norfolk, which was attended by the Colonial Ministers of Agriculture present in the ground.

The total number of persons who paid 5s. for admission on the opening day was only 878, as against 2,492 on the corresponding day at Liverpool in the previous year.

By Tuesday, the first half-crown day, the weather had become quite settled, and there was abundance of sunshine on each of the remaining days of the Show, although rain fell heavily on the Thursday night.

The General Meeting of Governors and Members was held at noon on June 27, in the large tent, when the Acting-President read a telegram from the King expressing His Majesty's hopes for the success of the Show, which he looked forward to visiting on the following day. Much interest was displayed in the announcement of the awards of the Judges in the competitions for the best managed Farms, Plantations, and Home Nurseries, and for designs of Buildings for Small Holdings. Thanks were tendered by the meeting to the Lord Mayor and Corporation, the Local Committee, the Great Eastern Railway, and to Mr. Russell Colman, for the valuable assistance given by them in various ways. (The full report of the proceedings will be found at page xxv of the Appendix.)

The judging in the Horticultural Exhibition took place in the morning of Tuesday, and at 2 p.m. this section was opened to the public.

On Wednesday, the principal event was, of course, the official visit of His Majesty The King, President of the Society. Leaving London by special train, His Majesty arrived at Thorpe station a few minutes after noon, and at St. Andrew's Hall received a loyal address from the Lord Mayor, Aldermen, and citizens of Norwich. The following is an extract from this address :

"We hail Your Majesty's presence here to-day as a happy augury for the continuance of that Royal interest in agriculture which in the past has so greatly promoted the welfare of the chief industry of this portion of Great Britain."

In the course of his reply, the King said :

"My presence here as President of the Royal Agricultural Society of England indicates my wish and intention to promote as far as in me lies the advancement and interest of agriculture and the breeding of stock, an industry not only of value to this locality but of capital importance to the Kingdom and to my whole Empire. It is my earnest wish to follow in my father's footsteps, and to give encouragement, countenance and support to all well-directed efforts for the benefit of agriculture, and for the welfare of all classes of my people who are engaged in agricultural production."

Before leaving St. Andrew's Hall, His Majesty conferred the honour of Knighthood upon the Lord Mayor, Mr. Eustace Gurney, whose father, the late Mr. John Gurney, as Mayor of Norwich twenty-five years earlier, received the Prince of Wales (King Edward), on the occasion of the Society's Show in 1886.

The Royal party then drove to the Market Place, where the school children of the city—numbering many thousands—were assembled to greet His Majesty, and thence, by way of Bracondale to the Showground, at the entrance to which, the Honorary Director, Sir Gilbert Greenall, on horse-back, met

the procession and conducted His Majesty to the Royal Pavilion, where he was received by the Acting-President and members of the Council who extended to him a loyal and cordial greeting.

The arrival of the Royal procession at the Show gates was signalled by the sounding of a fanfare and royal salute by the trumpet band of the 1st East Anglian Brigade of the Royal Field Artillery.

At the side of the Royal Pavilion were drawn up about 500 members of the Royal Norfolk Veterans' Association, who were inspected by His Majesty on arrival.

Luncheon was served in the Royal Pavilion, and amongst those who had the honour of being invited to meet the King at this function were the following representatives of the Colonies:—Sir Joseph Ward (Premier of New Zealand), the Hon. R. P. Roblin (Premier of Manitoba), Sir Newton Moore (Agent-General for Western Australia), the Hon. A. A. Kirkpatrick (Agent-General for South Australia), the Hon. W. L. Baillieu (Commissioner of Public Works, &c., Victoria), the Hon. J. S. Duff (Minister of Agriculture, Ontario), the Hon. John Richards (Minister of Agriculture, Prince Edward Island), the Hon. W. R. Motherwell (Minister of Agriculture, Saskatchewan), and Mr. W. P. Bull, K.C., of Ontario.

After luncheon, His Majesty, on the verandah of the Royal Pavilion, presented a Silver Cup to the driver of the best turn-out at the horse parade in Norwich on Coronation day. The successful entry was one of the Corporation water-carts, which was decorated as on the day of the parade.

The King then drove through the Implement yard, taking special notice of the exhibits to which the Society's Silver Medals had been awarded, to the Horticultural Exhibition, where he alighted and made a tour of the tents devoted to this section. His Majesty's carriage was also stopped at the exhibits of the Norwich Master Weavers' Association and the Norfolk and Norwich Hospital. After inspecting the Forestry and Education exhibitions, His Majesty drove, by way of the Working Dairy, to the end of the Cattle Sheds, where the Champion and first prize animals were "parked" for his inspection. Later His Majesty entered the Royal Box in the Grand Stand, and remained there some time as an interested spectator of the horse-jumping and other events in the large ring, leaving the Showyard at four o'clock for Trowse Station, whence he travelled by special non-stop train back to town.

While at the Show, His Majesty conferred upon the Right Hon. Ailwyn E. Fellowes (Acting President) the honour of Knight Commander of the Royal Victorian Order, and upon Sir Gilbert Greenall (Honorary Director) the honour of Commander of the Royal Victorian Order,

Prominent amongst the visitors on the Wednesday were the three members of the Abyssinian Mission to the King's Coronation accompanied by Capt. the Hon. N. G. Thesiger, D.S.O., who were greatly interested in the machinery section. On the invitation of the Duke of Devonshire, they re-visited the Showyard on Thursday, and were conducted through the various sections by the Stewards of Implements, Mr. Cornwallis and the Hon. John E. Cross.

On Wednesday evening a banquet was given by the Lord Mayor in St. Andrew's Hall, in honour of His Majesty's visit to the city. Several of the Colonial Ministers were present, and, amongst others, the Minister of Agriculture (Earl Carrington) and representatives from the county and city, as well as Members of Council of the Society.

On Thursday, the first shilling day, the Show was visited by a party representative of the various Parliaments of the Overseas Dominions, who were at that time guests in England of the Lords and Commons Committee. The members of this party, several of whom were accompanied by their wives, were entertained to luncheon in the Showyard by the Norfolk Members of both Houses of Parliament, Lord Hastings presiding.

A local section of the Horticultural Exhibition was opened on the Thursday after the judging of the exhibits in these classes, which were arranged in a special tent adjoining the three others which housed the exhibits in the open classes.

The attendance on the Thursday reached 75,266, or considerably more than half the aggregate attendance for the five days the Show was open.

On the closing day, Friday, the events in the Large Ring included a "Champion" Jumping Competition by the winners in the classes decided on the preceding days, and the prizes in the Harness Horse classes which were judged included three Fifty Guinea Gold Cups, which were awarded respectively for the best single horse, the best pair, and the best tandem.

Below are given tables showing (1) the number of visitors admitted by payment at different times on each day of the recent Show, and (2) the total daily admissions on each day at the last seven shows, and at the Norwich Show of 1886.

(1) Admissions by Payment at Norwich, 1911.

Day of Show	11 a.m.	1 p.m.	3 p.m.	5 p.m.	7 p.m.	Day's total
Monday (5s.)	356	683	808	878	878	878
Tuesday (2s. 6d.)	3,350	5,590	6,771	7,104	7,140	7,140
Wednesday (2s. 6d.)	9,772	14,971	19,651	20,415	20,441	20,442
Thursday (1s.)	28,403	52,954	68,201	75,029	75,259	75,266
Friday (1s.)	8,217	13,144	16,382	17,641	17,737	17,739
Total Admissions						121,465

(2) *Total daily admissions at the 1911 Show, compared with the previous six Shows and the Norwich Show of 1886.*

Prices of Admission	Norwich, 1911	Liverpool, 1910	Gloucester, 1909	Newcastle, 1908	Lincoln, 1907	Derby, 1906	Park Royal, 1905	Norwich, 1886
Half-crown (Implement Yard only)	—	—	—	—	—	—	—	14s
Five Shillings	878	2,492	1,492	2,397	1,880	2,752	—	625
Half-crown	7,140	19,641	20,019	32,142	22,815	25,866	2,770	8,074
Half-crown	20,442	31,193	15,152	28,880	22,735	—	7,684	10,894
One Shilling	75,266	44,327	30,261	46,469	51,868	46,075	7,764	42,774
One Shilling	17,739	41,154	21,152	51,959	33,878	44,070	5,770	42,394
Totals	121,465	137,812	88,396	213,867	133,006	119,143	23,978	104,909

¹ Derby, 1906—Only one Half-crown day.

² Park Royal, 1905—No Five Shilling day: third day, price of admission (2s. 6d.) reduced to 1s. after 3 p.m.

Comparative statements of entries in the Live Stock and Implement Sections for the same Shows are also appended:—

Entries of Live Stock, Poultry, and Produce.

	Norwich, 1911	Liverpool, 1910	Gloucester, 1909	Newcastle, 1908	Lincoln, 1907	Derby, 1906	Park Royal, 1905	Norwich, 1886
Horses	1710	1686	1599	1664	1506	1543	2372	493
Cattle	1,065	1938	1,146	1948	1,090	1926	898	681
Sheep	746	772	1802	1695	1672	1564	591	446
Pigs	416	361	433	312	368	266	252	203
Total	2,943	2,757	2,980	2,619	2,576	2,319	2,113	1,823
Poultry	1,218	1,195	754	768	826	811	871	121
Produce	670	701	765	416	572	525	493	240

¹ Exclusive of Double Entries.

² Exclusive of Draught Horses and the Harness Classes.

Shedding in Implement Yard (in feet).

Description of Shedding	Norwich, 1911	Liverpool, 1910	Gloucester, 1909	Newcastle, 1908	Lincoln, 1907	Derby, 1906	Park Royal, 1905	Norwich, 1886
Ordinary	Feet 6,690	Feet 7,590	Feet 7,575	Feet 6,490	Feet 7,650	Feet 7,818	Feet 6,590	Feet 7,155
Machinery	3,085	2,555	2,420	2,585	2,185	2,520	1,750	2,017
Special (Seeds, Models, &c.)	3,907	3,420	2,881	2,960	3,251	2,892	1,629	1,640
Total [Exclusive of open ground space]	13,692	13,565	12,886	12,035	13,066	13,030	9,969	10,812
No. of Stands	457	454	437	389	417	424	299	322

At the Norwich Show of 1849 there were 146 Stands

In the statement on p. 212 a comparison of entries, classes, and prizes is made between the Shows of 1886 and 1911.

COMPARATIVE STATEMENT OF ENTRIES, ETC.

AT THE LAST TWO SHOWS HELD AT NORWICH IN 1886 AND 1911.

HORSES AND CATTLE	1886		1911		SHEEP, PIGS, POULTRY, PRODUCE	1886		1911	
	Classes	Entries	Classes	Entries		Classes	Entries	Classes	Entries
HORSES:—					SHEEP:—				
<i>Prizes</i>	—	£1,570	—	£3,532	<i>Prizes</i>	—	£965	—	£1,920 10s
Shire	7	78	9	103	Oxford Down	4	58	5	49
Clydesdale	6	35	8	54	Shropshire	4	94	6	68
Suffolk	9	98	9	78	Southdown	5	112	6	85
Hunter	2	19	10	122	Hampshire Down	4	35	6	62
Polo Pony	—	—	5	33	Suffolk	5	34	7	60
Cleveland Bay or	—	—	—	—	Dorset Down	—	—	4	14
Coach Horse	—	—	2	9	Dorset Horn	—	—	4	19
Hackney	8	98	9	79	Ryeland	—	—	3	16
Hackney Pony	3	33	4	23	Kerry Hill (Wales)	—	—	2	5
Shetland Pony	—	—	2	16	Other Short Wools	4	9	7	66
Welsh Pony	—	—	3	11	Lincoln	4	24	4	17
Riding Classes	7	65	11	108	Leicester	4	18	4	17
Harness Classes	3	44	12	151	Border Leicester	—	—	3	28
Draught Horse	4	13	1	7	Wensleydale	—	—	4	16
Jumping	—	—	4	78	Lonk	—	—	2	4
					Derbyshire Gristone	—	—	3	11
					Kent or Romney	—	—	—	—
					Marsh	—	—	6	93
					Cotswold	4	28	4	35
					Devon	—	—	3	12
					South Devon	—	—	5	12
					Dartmoor	—	—	3	15
					Exmoor	—	—	3	15
					Cheviot	—	—	3	14
					Herdwick	—	—	2	4
					Welsh	—	—	2	9
					Black-faced	—	—	—	—
					Mountain	—	—	3	17
					Other Long Wool	4	28	—	—
					Cross Breeds	1	6	—	—
					Total for SHEEP	43	446	100	746
CATTLE:—					PIGS:—				
<i>Prizes</i>	—	£1,665	—	£2,726	<i>Prizes</i>	—	£300	—	£710 10s.
Shorthorn	8	83	18	323	Large White	1	40	6	102
Lincolnshire Red	—	—	8	52	Middle White	4	31	6	51
Shorthorn	—	—	8	79	Small White	4	28	—	—
Hereford	8	69	8	54	Tamworth	4	18	8	61
Devon	5	28	8	54	Berkshire	4	54	6	66
South Devon	—	—	6	22	Black	1	32	6	75
Longhorn	—	—	5	26	Lincolnshire (unly-	—	—	—	—
Sussex	5	41	5	35	coated	—	—	6	58
Welsh	5	25	4	14	Total for PIGS	24	201	36	410
Red Poll	8	145	8	157	TOTAL FOR STOCK	173	1,823	345	3,350
Aberdeen Angus	—	—	6	61	POULTRY:—				
Galloway	—	—	4	15	<i>Prizes</i>	—	£268	—	£408
Highland	—	—	2	3	—	48	181	132	1,218
Ayrshire	—	—	4	23	PRODUCE:—				
British Holstein	—	—	4	15	<i>Prizes</i>	—	£ s	—	£205
Jersey	6	189	9	188	—	23	196 75	62	670
Guernsey	5	41	6	66					
Kerry	—	—	5	39					
Dexter	—	—	5	47					
Dairy Cow	2	18	3	36					
Butter Test	—	—	2	74					
Any other Breed	5	42	—	—					
Total for CATTLE	57	681	120	1,321					

Grand Totals for
LIVE STOCK, POULTRY,
and PRODUCE in 1911. } 539 Classes . 5,238 Entries . £10,600² Prizes

¹ Animals exhibited in more than one class are here counted as separate entries.² Including £480 for Farm Prizes, £250 for Horticultural Exhibition, £127 for Competitions.

DESCRIPTION OF EXHIBITS.

The remarks and criticisms contained in the following pages are taken from the official reports made by the Judges in the different sections. Full particulars as to ownership, breeding, pedigree, &c., of the prize-winning animals will, as usual, be found in the list of awards, which, with the names of Officials and Judges at the Show, is printed in the Appendix to this volume. The Champion prize winners in the pig classes are the subjects of illustration on this occasion.

HORSES.

This section at Norwich made probably the best exhibition of horses ever seen in the "Royal" Show ground. No less than seven Gold Challenge Cups of the value of fifty guineas each were offered in the harness classes, and a Challenge Cup, value 50*l.*, was also offered for the best stallion in the classes for Suffolk Horses.

Shires.—The Shire horses were not only strong in entry, but of true type and exceptional quality. A total entry of 103 compares well with former years, and in most of the classes competition was very close and keen. The two largest and probably best classes in this section were those for three-year-old stallions and brood mares. The Duke of Devonshire's *Wurton Draughtsman* was placed first in the stallion class, and was afterwards awarded the Male Championship, with Lord Rothschild's most promising yearling colt reserve. Messrs. W. & H. Whitley secured the Female Championship with their big, weighty, true moving filly, *Lorna Doone*, Sir Walpole Greenwell's typical mare, *Misty Morn*, being Reserve. There were two most important and satisfactory things in connection with the Shire classes which could not fail to be noticed by observant visitors—one being the even distribution of prizes to animals both bred and owned in all parts of the country; the other was the excellent support given to the breed by the noblemen and gentlemen of England. The result was a good illustration of what landlords and tenant farmers can do when they work together.

Clydesdales.—Yearling colts were a very good class, and in point of numbers and quality were equal to anything ever seen at the "Royal." Two-year-olds were small in number, but fair in quality. Three-year-olds were a small class, but *Royal Warden* was an outstanding winner. He is made like a cart-horse, and is a very good representative of the breed. This animal afterwards secured the Championship for the best stallion. Of the fillies, the yearlings and two-year-olds were good classes, being both in numbers and quality equal to anything

seen in Scotland. Three-year-olds were a small class, but of good quality. Brood mares were small in number, but they were of good quality. *Peggy Pride*, awarded the first prize, was an outstanding winner not only in her class, but also for the Female Championship. All over, the Clydesdales, in the opinion of the Judges, were the best ever seen at the "Royal."

Suffolks.—It was only natural that, with the Royal Agricultural Society's Meeting in the adjoining county of Norfolk, breeders of Suffolk horses should strongly support the classes for that breed at the national show. To mark the special occasion, a "Coronation" Challenge Cup of the value of 50*l.* was provided by the Suffolk Horse Society to be awarded annually for the best Suffolk stallion exhibited. The entries in the nine classes numbered in all seventy-eight, and a lot of splendid animals were shown, but it was a matter for regret that there were so many absentees. Special mention must be made of the two-year-old stallions, fourteen of which appeared in the ring. They were an excellent lot. Compared with the animals of fifteen years ago, the feet of the present-day Suffolks show a marked improvement.

Draught Horses.—The class for draught geldings foaled in 1907 or 1908, with three prizes of 20*l.*, 10*l.*, and 5*l.*, given by the Norwich Local Committee, only secured an entry of seven animals. Sir Peter Walker was placed first with a fine, active, upstanding, brown three-year-old Shire, shown in the pink of condition, Mr. Fred Brazier being easily second with another big, weighty Shire with capital joints. These were both good animals, and were well in front of anything else in the class. The third prize winner was a very useful black four-year-old by a Shire horse, and from a Clydesdale dam. A bay Clydesdale was Reserve.

Hunters.—Class 28 was not an exceptionally good one, although the winner was a nice colt. The prize winners in Class 29 all showed high merit, and this was quite a good class. Some nice exhibits were seen in Class 30, the first and second prize winners both being promising young Hunters. Class 31 was good, and the winner, a filly of exceptional excellence, also won the Champion Gold Medal for the best filly not exceeding three years old. The first and second prize winners in Class 32 were fairly good, with little to choose between them. Class 33 was small, but included several nice fillies. Class 34 was one of the best collections of brood mares the Judge had ever seen, both as regards number and quality of the exhibits. The winner was a remarkably fine mare. Class 35 was small, but the winner was a heavy-weight brood mare of fine stamp, and had a good foal. The foals in Classes 36 and 37 were not very good, with the exception

of the winners. The winning foal in Class 37 was from the first prize heavy-weight mare. The breeding classes were decidedly good, and the light-weight brood mares excellent.

Hunter Riding Classes.—Class 38 was weak, and contained nothing of special merit. The winner in Class 39 was a nice horse but otherwise this class, like the previous one, was weak. Although containing nothing of outstanding merit, Class 40 was fairly good, and a very useful lot of horses were found in Class 41. Class 42 contained many horses of high quality, and was very good generally. The winners in Class 43 were of a high standard, and this was also a very good class. In Class 44 the winner was an exceptionally good heavy-weight horse that afterwards secured the Championship, and the second was also a valuable animal. The class was a good one.

The classes as a whole were good, and the show of light horses in the Hunter section throughout was one of, if not the, best seen at the "Royal."

Polo and Riding Ponies.—In Class 45 the prize winners were good, the first especially showing fine action and quality. Class 46 was a good one, and included two nice colts and a very useful mare. A very good filly headed an excellent entry in Class 47, and was followed by some nice animals of correct polo pony stamp. Class 48 was useful, the winner being excellent. Two really good brood mares came forward for Class 49, the winner being a fine mover. She was exhibited with an exceptional foal by the stallion that won the Championship.

Cleveland Bays and Coach Horses.—Though small in numbers, the exhibits in Classes 54 and 55 lacked nothing in merit. The majority of the animals shown were of the Cleveland Bay type. Several of the winners were sold at the Show to go abroad, including the winning brood mare and foal. This is a matter for regret, as there are too few of her class in the country. It is expected that these breeds will make a show worthy of their reputation at Doncaster in 1912.

Hackneys.—In the classes for Hackneys the result of the exhibition must have proved extremely satisfactory to the President, Council, and others connected with the Royal Agricultural Society. At no period in the Society's existence have the classes been so well filled, nor the quality of the animals generally so good. Many of the principal winners at the leading shows of this year put in an appearance, and there were also a number of new faces which were hard to beat.

Hackney Ponies were fairly good as regards numbers, and on the whole were a smart and dainty lot, most of them being brimful of quality and extravagant goers.

Harness Horses.—The Harness classes were well filled, and the animals competing therein were, on the whole, a good and level lot. At the same time, the winners comprised, for action and quality, some of the best in England. Several smart young horses put in an appearance, and won their respective classes in good company.

Shetland Ponies.—Class 81, for stallions, contained some fine animals, the first and second prize winners being of outstanding merit. They made a fine show with good straight action and went with great style. In Class 82, for mares, there were also some splendid animals. The first and second prize winners were beautiful goers, and it needed very close inspection to decide which was the better.

Welsh Ponies.—Though the exhibits in this section were few, they were of extra quality. *Shooting Star*, who was again awarded the first prize in the stallion class, is as near perfection as can be, and when in motion a better or truer mover would be difficult to find. The second prize winner, *Grove Bullistite*, a very sweet pony, made a nice show, but was beaten by the winner for substance, style, and action. *My Brother*, the bay pony which came third, is of a different type from the other two greys. This animal may alter considerably, as he is only a baby and a little too fine, although a nice neat mover. Four different types were observed in the brood mare class, *Lady Starlight* being a very easy winner. She is a good-looking pony and a sweet mover, her action being light, straight, and on. *Mountain Lass*, a roan pony, awarded the second prize, is one of the old fashioned sort. She is getting on in years, and her back and action are not so good as formerly, but she is still a good breeding animal. The roan pony awarded the third prize is also a nice animal, but could not move. There were only two exhibits in the Riding class, the bay winner being a real beauty, that could walk, trot, or canter at ease.

CATTLE.

With the exception of the Gloucester Show of 1909, the entries in the cattle classes were more numerous than at any Show since the Jubilee Exhibition at Windsor in 1889.

Much interest was evinced in the specimens of 'White Polled Cattle' sent "for exhibition only" by Mr. John Cator, M.P., from his herd at Woodbastwick, near Norwich. The exhibits consisted of a four-year-old bull, a cow born in 1900, a heifer calf born in April, 1911, and twin calves—a bull and a

¹ An interesting account of "White Cattle" An Enquiry into their Origin, appears in the *Transactions of the Natural History Society, Glasgow*, Vol. V Part II., 1897-8; Part III., 1898-9.

heifer—born in August, 1910. The Society is indebted to Mr. Cator for the following particulars concerning his herd :—

The White Polled Cattle at Woodbastwick number upwards of fifty, including three bulls and twenty cows besides calves and steers. They have been at Woodbastwick since about 1840, and are an offshoot of the now extinct Guntton herd, which, according to Storer (*Wild White Cattle of Great Britain*), were brought to Norfolk in the latter part of the 18th century from Middleton Park, Lancashire, the seat of the Assheton family. The herd, then related to that at Gisleburne, can be traced to Whalley Abbey, Lancashire, and Bewick mentions in 1790 that the cattle there were by tradition formerly the property of the abbots of that monastery until its suppression in the time of Henry VIII., and had remained there subsequently until his time.

The Woodbastwick herd owes much during the last twenty-five years to that of Sir Charles Shakerley, of Somerford Park, Cheshire, for a periodical interchange of bulls has produced characteristics now common to both, the shape, with black points, ear, rim round the eye, muzzle, and spots on the front fetlock being similar. The red points, which were formerly the feature of the Guntton herd, have mainly disappeared.

Occasional crossing with the Shorthorn has been found inevitable to prevent the breed from extinction, but, despite this, the herd preserves a strong type, the tendency to white, even after crossing, being very marked. No Shorthorn has been used for four generations.

The cow exhibited at Norwich yielded, in 1910, 11,083 lb. of milk in 47 weeks, with an average weekly yield of 22½ gallons, the highest weekly yield in May being 429 lb.

The bullocks fatten rapidly, and are in considerable demand among the dealers in the district.

Shorthorns.—The entry in this section, numbering 219, though perhaps not above the standard, was, on the whole, up to the average. *Village Diamond*, the first prize winner in Class 86 (bulls calved in 1906, 1907, or 1908) was also awarded the Championship. This animal is remarkably even fleshed and short legged, with true typical characteristics, and was an easy winner. The second prize went to a bull of similar breeding, a year younger than the one above. The class as a whole was good. In Class 87 (bulls calved in the first three months of 1909) the first and second prize winners stood out clearly in a moderately good lot, the former winning easily. Class 88 (bulls calved in the last nine months of 1909) had a large entry of moderate animals. The first prize in Class 89 (bulls calved in the first three months of 1910) went to a bull of considerable merit, but though the entry was a large one, there was no other exhibit of very high class. Class 90 (bulls calved in the last nine months of 1910) was a large one containing many good animals, and though the first two appeared pretty equal in merit, there were a large number of very useful bulls behind them. The group class, for the best collection of either three or four Shorthorn bulls bred by exhibitor and entered in the preceding classes, contained a creditable lot of six entries, making a good show in the ring. Cows in milk calved in or before 1907 (Class 92) were only eight in number. The three

prize animals were of totally different types, but all three good of their type. Class 93 (heifers in-milk calved in 1908) was exceptionally good. The first prize winner in this class was afterwards awarded the Female Championship, and is a very good specimen of the breed. Class 94 (heifers calved in the first three months of 1909) was small without anything of much distinction. Class 95 included several good heifers calved in the last nine months of 1909, the first prize winner being particularly sweet in style and Shorthorn character. The yearling heifers in Class 96 were good and numerous, without any great outstanding winner. One or two animals in this class were excessively overfed, and this remark applies to all the female classes in a more or less degree. In Class 97 there was a good lot of yearling heifers, the first and second prize winners being exceptionally so. In the Group class (98) for the best collection of three or four cows or heifers bred by the exhibitor the seven entries made a fine show, the winners being a very even typical lot.

Dairy Shorthorns.—In Class 99 (bulls) there were only four entries of moderate quality, the conditions of entry restricting competition. Class 100 (dairy cows calved in or before 1906) was a grand one of twenty-four exhibits, showing, as a whole, great merit, and generally giving yields of milk well above the standard. Class 101, for four-year old cows, was good, containing some heavy milkers of Shorthorn character. In Class 102 (heifers calved in or after 1908) there was an entry of seven, which fully represented the type of animal desired by the Dairy Shorthorn Association, each entrant well qualifying for that Association's certificate.

Lincolnshire Red Shorthorns.—The general average of these classes was very good and exhibitors are realizing the advantage of showing their cattle in better condition than formerly. Considering the nearness to the homes and stronghold of the breed some of the classes might have been better filled. The winner in Class 104 repeated his win of 1910, and is keeping his evenness and good form well. He was also awarded the Champion prize for the best bull. This was a class of very good bulls. Class 105 was the weakest of the male section, though the winner improved his position from 1910. The second prize bull gives promise of improving with age. Class 106 was very good, and there was little to choose between the first three bulls. The winner had more size and Lincoln Red character, and was a splendid colour. The second and third were good bulls with lean flesh. The winner in Class 107 was a wonderfully level cow for her age (10 years). It was a strong class and included several extra good cows. Class 109 contained some typical heifers. Taken as a whole Class 110

was the best of the female section, the winner being a beautiful level-fleshed animal.

Herefords.—The exhibits at Norwich were both numerous and good. Out of the four old bulls shown, three were well worthy of a first prize, that is to say they were quite up to the first prize standard. In a remarkable class of thirteen two-year-olds, Lord Coventry's *Dollymount* was first, and this animal was also champion. He is a very level massive bull with grand hind quarters, and as a yearling he was first in his class all round. The second prize bull was a typical Hereford, with good markings, and altogether a grand young sire. The third, a son of the second prize old bull, is made on different lines, full of quality, but a bit small. Then came a number of big, useful bulls, many of them of more than ordinary merit. The yearlings were even more numerous, and were divided into two classes. The senior division contained twenty exhibits. Mr. Tudge won easily, as he did at the Royal Counties and at the Bath and West Shows, with *Cameron*, none too big, but very even and well proportioned, with good quality. The second prize winner was of a different type, and requires time to develop. The third and fourth (from the same breeder) were both good, and after these were many that will probably grow into valuable sires. The junior yearlings were not well represented. The first prize went to Mrs. Medlicott for *Bodenham Leonardo*, but with the exception of the first three or four animals there was nothing remarkable in this class. In the cow class, which was only a small one of three entries, Mr. Peter Coats' famous *Ladybird 2nd* regained her position, and Mr. Tudge's *Gwendoline* took second place. There were only two or three younger matrons, headed by *Ida*, a very good one from the same herd as *Ladybird 2nd*. Mr. Cooke-Hill was awarded the first prize in the two-year-old heifer class for *Shelsley Primula*, a heifer with great substance, good flesh, and grand character. This animal was also the winner of the Female championship. The second prize animal will probably maintain her form better, and will no doubt grow into a good cow. There were several others likely to make good breeding cows. The yearling heifers were a particularly attractive collection, the winner being quite a smart one, though somewhat undersized.

Devons.—These classes contained 47 entries with a few absentees. The competition throughout was keen, for practically the whole of the animals were good representatives of the breed. The four older bulls present were typical specimens. The first prize winner possessed character and great scale, probably about 23 cwt. The competition in the two-year-olds was very close, the winning bull in this class also obtaining

the Championship. The yearling bull class filled well. The cow class contained three good animals, the two-year-old heifers were very strong and even in quality, while the yearling heifers made a large and good class, three standing well out from the others. This class contained the winner of the Female Championship in *Beauty of Windsor* shown by H.M. The King. The six dairy cows that were brought into the ring showed well, possessing the true characteristics of the breed, with capital udders, and did great credit to this dual purpose breed.

South Devons.—The old bulls were three in number, the first prize and Challenge Cup being awarded to a three-year-old animal that was far in advance of the others, and should make a good old bull. The second prize went to an animal full of flesh but rather dark in colour. The first prize winner in the yearling bull class was an exceptionally good one, likely to be seen again. The other exhibits were not quite so even. In the cow class the honours went to a cow showing good milking qualities, and to a very useful animal with good colour. The other entries were full of milking qualities. In the two-year-old class, a well-proportioned heifer, full of quality, was placed first. The second was a large heifer for her age, being deep and full of flesh; and the third, though dark in colour, was very even. Yearling heifers were four in number. The winner in this class was even and full of flesh, and the second prize winner, though not quite so even, ran very close. The third prize and reserve number fell to nice heifers of good colour.

Longhorns.—These classes were fairly well filled, there being some good animals in each. In the class for old bulls, the first prize winner, *Eastwell Eagle*, is a high class bull, and should render good service to the breed. Some of the other bulls in this class would have done themselves more credit had they been shown in better condition, but they will no doubt be more valuable to their owners, through not having been fed up for show. The same remark also applies to the class for cows, but it must be noted that most of these were entered to compete for milk-yield prizes. There were one or two good young bulls, which it is hoped may be seen again in the show ring. The heifer class contained two or three exceptionally nice cattle of true Longhorn type, the first prize winner, *Easter of Eastwell*, being especially good. To her was subsequently awarded the Challenge Cup for the best Longhorn in the Show.

Sussex.—This breed was well represented at the Norwich Show. The first prize animal in Class 139 was of nice quality and subsequently secured the Champion Medal for the best bull exhibited. The second prize winner was also a good animal

and was Reserve for the Champion Medal. The third was a short-legged bull a little hard in his coat. In Class 140 the first prize bull was of beautiful quality but on the small side, and the second was very promising. The third was a good bull but a little wiry in his coat. The first prize winner in Class 141 was a very fine cow of nice quality. The second prize went to an animal of good type and quality with a capital bull calf. The third was a good cow with a nice heifer calf. The winner in Class 142, a beautiful heifer of first rate quality, was also awarded the Champion Medal for the best cow or heifer exhibited. The second and third were also heifers of nice quality. Class 143 was a strong one of good heifers, the first prize going to a beautiful animal. The second was a nice level heifer, and the third was also good.

Welsh.—The entries in these classes were fewer this year than usual, owing no doubt to the show being held so far away from Wales. However, the quality of most of the exhibits was quite up to the standard. Three very good specimens were shown in the aged bull class, the winner being a four-year-old, full of quality and substance. The second prize went to a younger animal of considerable merit, the reserve being awarded to another weighty bull, lacking a little in quality. In the young bull class the first prize went to a fairly promising youngster of ten months, the second prize being taken by another young bull of fair quality. The cow class was a good one, both the first and second prize winners being of excellent quality with plenty of size. The heifer class contained two or three splendid specimens, the first prize winner being a very level and compact young heifer. The second was younger, but showed a great deal of quality, and had a nice coat.

Red Polls.—The display of this breed was a record in point of numbers, 132 being entered. The quality of the animals generally was excellent. Admirers of the East Anglian breed had evidently determined to support the occasion to the best of their ability, and must have been well satisfied with the result. The bull classes included many specimens of exceptional merit, the majority being well-grown, deep fleshed animals, true to type. The Championship was awarded to *Letton Vanity Davyson*, and the Reserve to *Letton Rose's Davyson*, by the same sire. Both these animals were of great scale. The class for cows in milk contained thirty-four entries, and in this case the heavy milking qualities of the breed were well illustrated. The Champion female was supplied from this class in *Chedda*, exhibited by the Acting-President. She is an animal of excellent type, possessing a remarkably good udder. Lord Hastings' *Majimag*, showing nice quality, and a true specimen of the breed, was Reserve Champion. In the three classes for

heifers fifty-four were entered, and a very meritorious lot they were. The majority were very level, rich in colour, and promise to develop into deep milking cows.

Aberdeen Angus.—The classes were remarkably well filled. The sixty-one animals entered came from some of the best known herds in England and Scotland, and included three from his Majesty the King's farm at Abergeldie Mains. The cattle were a nice lot, and well brought out. The Gold Medal offered by the Aberdeen Angus Cattle Society for the best animal in Classes 156 to 161 was awarded to Mr. Kerr's cow *Juanista Erica*, and the Gold Medal of the English Aberdeen Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Society in Classes 156 to 161 was awarded to Mr. Drummond's bull, *Wildgrave of Ballindalloch*.

Galloways.—So far away from the home of the breed a large exhibit was not looked for, but the individual merit of the various animals did great credit to both the breed and exhibitors. Where there is no supreme championship given, it is worthy of record that perhaps the best animal in the section was the winner in the cow class, shown by Mr. Robert Graham, of Auchengassel, and bred by Mr. Lane, Rust Hall, Ireland, from which country we so seldom have an exhibit taking a prominent place at our national shows. In the older class for bulls there were four animals forward, the first prize being given to *Marchfield Despised*. This five-year-old bull is particularly stylish, level, and well fleshed, and was Champion bull at the Highland Society's show last year. The second and third prize takers were one year younger, and have occupied either first or second in their own class wherever shown. Bull stirks, as was to be expected, were not shown in the same form as in the older class, but the first and second were animals of distinct merit. The female classes contained animals of great promise. The first and second in the cow class were very difficult to equal, combining as they did both quality and substance. The third prize animal, a three-year-old cow, was not in the same show form as her rivals. The heifer class had again two excellent leaders, Messrs. Thomas Biggar & Sons showing a big sized yearling, *Lizzie 4th of Chapelton*, sired by their third prize bull, "Sweepstakes." She was brought out in fine bloom, and, having good lines and being an excellent handler, is quite a credit to the breed. Mr. A. H. Fox-Brockbank's second prize yearling has not the growth of the first to commend her, but with a perfect head, neck, and shoulder, made it very difficult to decide which of the two should lead the class. The third prize heifer, a very useful two-year-old, was shown by Mr. Robert Graham.

Highland.—There were only three exhibits in this section, and all belonged to Mr. Kenneth McDonaill, Logan, Strathairn. Two very good quality bulls were shown, and a particularly sweet and stylish dun cow.

Ayrshires.—The Judge, in his report, says: "The Ayrshire cattle at Norwich were the best I have ever seen at the Royal." Class 169A, for cow or heifer in-milk, had eight animals forward, and every one of them was a good typical Ayrshire. The first three animals were exceptionally good, showing splendid udders and teats, and were also stylish animals showing plenty of substance and quality. Only two animals were exhibited in Class 169B (cow or heifer in-calf). The first prize one was a great stylish heifer, showing great promise of good udder and teats, but was a little back from calving. There were only three bulls shown in Class 168, but they were all of the highest order. The first prize one was an animal of grand quality, showing great size and substance. The second had great quality, but lacked the substance of the winner.

British Holstein.—This was the first occasion that separate classes for Dutch cattle had been instituted at the National Agricultural Show, although specimens of the breed were on view at the historic Exhibition at Windsor in 1889. The entry at Norwich was disappointing, only twelve animals coming before the Judge, and, taken as a whole, the exhibits were not so representative of the breed as could have been desired. Class 171, for males, was good, the first prize winner being an exceptionally fine bull, with a magnificent body, but a little defective in the horns and nose. This bull afterwards realised fifty guineas at the auction sale. The second prize animal had a nice head, but not such a good body or skin. The third prize winner walked rather badly, but he should develop into a grand stock getter. Only two cows appeared in Class 172, and, while neither beast was of outstanding merit, both were more than useful dairy animals. The winner in this class was suffering from a severe chill, which spoiled her chance of success in the milk-yield competition. The best type of Dutch cattle was found in the heifer class, which included animals of splendid appearance and quality, all being worthy of commendation. The winner in this class, a big and well-grown heifer, came from Scotland, and should be heard of again at future shows. The heifer awarded the second prize was by the same sire as the winning bull, and possessed many of his good points. The third prize animal was neat and stylish, and was not far separated from the heifers receiving higher awards. It is hoped that visitors to next year's Show at Doncaster may have a better opportunity to judge the capabilities of these exceptional dairy

cattle, which are coming so prominently before the public as the heaviest milkers in return for food received.

Jerseys.—The classes were well filled throughout, and the quality, generally speaking, was very good. The first prize bull in Class 175 was decidedly one of the best old bulls seen for some time, in depth, symmetry, and general character leaving little to be desired. This animal was also awarded the Championship and Special Prize. The second was a well-grown, long, and stylish bull. The third was also a very good bull; in fact, there was hardly a bad bull in the class. The introduction of a two-year-old class for bulls, Class 176, was a great advantage to the Show, and gave five good young bulls a chance of getting into the prize list, which they would not have done if they had been obliged to compete with the old bulls. In Class 177 (yearling bulls) a decidedly broken-coloured bull was first, which, considering that the first prize old bull was also broken-coloured, marks the change from the fashion that prevailed less than fifteen years ago. There were many promising yearlings in this class, which was quite a good one. Cows calved in or before 1907 made quite an excellent and very well-filled class. The first prize winner, an exceptionally good type of Jersey, both in looks and dairy qualification, afterwards won the Female Championship. The second was built on different lines with very fine points, and a remarkably good bag and milk vein. She well deserved her place. The third was, perhaps, a little fleshy, but a very fine type of dairy cow. The fourth was a beautiful cow of very good quality, while the fifth was fine, but not quite so deep in the body as she might have been. That two others were highly commended, and that seven were commended, speaks for itself as to the general character of the class. There were three very good heifers at the top of Class 179 (three-year-olds), but in general character the exhibits in this class could not compare with the old cows.

The two-year-old heifers in Class 180 were a good class, but, taken as a whole, not quite so good in their udders as one could wish. An exceptionally nice yearling headed Class 181, and the other prize winners and H. C.'s made a very close and even competition. Class 182 (for cows or heifers in-milk, bred by exhibitor, and sired in Great Britain or Ireland, open to animals in classes 178-180) brought together many animals seen in previous classes, but, of course, with the disadvantage of three-year-old and two-year-old heifers competing against old cows, which greatly handicaps them. They were, on the whole, quite a good class, and fine in character.

Guernseys.—For a show held in the East of England, the classes of Guernsey cattle were exceedingly good, while the

numbers were satisfactory. The quality of the cattle was above the average. Class 184, for old bulls, contained no less than eleven entries, and the first four or five were fully creditable to the breed. The first prize bull was rather low in condition, but full of quality and masculine character in every way. The second was a very massive, well-grown bull, perhaps a trifle on the large side, but in every respect a handsome bull, and running the winner very close for first place. A well-shaped bull came in for third prize. In Class 185 (bulls calved in 1910), the first place was taken by a very straight growing bull, which came all the way from South Devon. This was a good class. Class 186, for cows, contained the satisfactory entry of seventeen, and it took some little time to decide between the merits of the first three. Class 187, for two-year-old heifers, was a small one, but the quality was good. The first and second promised particularly well for the dairy, having well-shaped udders. Class 188 (yearling heifers) had a more numerous entry, and, as is frequently the case with yearlings, it was a matter of some difficulty to make a selection among the best half-dozen.

Kerries.—The Kerries were not so well represented as the Dexters, although there were some good animals exhibited, notably Mr. R. Tait Robertson's *La Mancha Mr. Dooley*, the first prize winner in Class 190, and also Champion for the best Kerry in the Show, a splendid animal, showing all the characteristics of the breed. Lady Greenall's *Fenella*, a beautiful Kerry cow, first in Class 191 and R. N. for Champion, ran the bull very hard for the Challenge Cup. Lady Greenall's *Walton Fame* and *Walton Feather*, both nice heifers, took first prizes in their respective classes. The Kerry cows were by far the best class in this section. With the exception of the heifers named, the others were not very good, there being only eight entries in two classes.

Dexters.—In Class 195 (bulls) twelve very good animals came into the ring, His Majesty the King taking first prize and Reserve for Champion with *Robin Hood*, a nice level animal. The cows were a very good lot, the Hon. Mrs. Claud Portman's *La Mancha Hard to Find* being an easy winner for first prize and Championship. One rarely sees a finer specimen of a Dexter cow. The heifers in both Classes 197 and 198 were well shown, although some of them, particularly in Class 198, were inclined to be coarse. *Barrow Bracelet* in Class 197 and *Barrow Buttercup 2nd* in Class 198, owned and bred by Mr. H. Martin Gibbs, took first prize in their respective classes, and were both very good animals. Mrs. Edward Moran's *Edward Kenmare*, the winner of the second prize in Class 198, was also a very promising heifer.

Dairy Cattle.—There were sixteen of the seventeen entries present in Class 200 (cows born in or before 1907), and a marvellous milk production was shown, the sixteen animals yielding an average of over 41 lb., two cows giving over 50 lb. each. In Class 201 there were three heifers of good quality exhibited, all showing good dairying properties.

SHEEP.

Oxford Downs.—Class 204 (shearling rams) was a strong one, and fairly representative of the breed, though there was no ram of exceptional merit above the others. Class 205 (single ram lambs) was fairly good, but varied considerably in forwardness of condition. Class 206 (three ram lambs) was a strong one, and there was little to choose between the leading pens. Class 207 (three shearling ewes) was regarded by the Judges as the best of the breed. To Class 208 (ewe lambs) apply the same remarks as to Class 206. Taken on the whole, both as to numbers and quality, the breed was well represented.

Shropshires.—These classes were not so well filled as usual, though there were sixty-eight entries in the six classes. The Judges were somewhat disappointed not to find more high-class sheep in the ram classes. The shearling ewes, although few in number, were good, and this remark equally applies to both ram classes.

Southdowns.—As might be expected when the "Royal" Show is held in the eastern counties, these classes were well filled. The Southdown Sheep Society's Gold Medal for the best shearling or two-shear ram was awarded to a typical shearling with good head and wool, very broad in the back, short on the leg, and a good handler, but he might with advantage have been bigger. The Reserve to him was a two-shear ram, large, good in the back and over the heart; in fact, of great breadth and girth and good in wool, but perhaps a little too far off the ground. The three shearling rams in the first prize pen were really excellent, full of quality, with beautiful wool, and of good length and size—real flock-masters' sheep. The first prize shearling ewes, which also won the Silver Medal for the best pen of females, could not be denied their place, but they were closely pressed by the second prize winners, which were perfect in quality and wool, well brought out, and quite typical of the true old Southdown breed. On the whole, the Southdowns were well above the average.

Hampshire Downs.—Although perhaps not showing any great advance on some previous shows of the Royal Agricultural Society, the Judges considered the collection of Hampshire Down sheep at Norwich a very creditable and level lot. Their opinion of the relative merit of the exhibits is

expressed in the awards, but they were particularly pleased with the winners in Classes 223 and 226.

Suffolks.—In the two-shear ram class the first, second, and third prize sheep were fine specimens of the breed. In the shearling ram class the first prize winner was a sheep of exceptional merit, wide and deep, with plenty of colour and good wool. The second, third, and fourth prize winners were also very good sheep. The ram lamb class was a very good one containing some very forward and well-grown lambs, the first prize one being a splendid specimen of the breed. The class for three ram lambs was also very good, all the prize winners being true to type and character. The shearling ewes were very smart, the prize winners being of good type. The ewe lamb class contained some fine specimens of the breed, and it is a question if a better pen of ewe lambs than were the first prize winners has ever been exhibited. The class for shearling ewes in wool was a very interesting one, showing the class of wool the Suffolk sheep produces. All the exhibits were grand sheep. The entries in all classes were fair, and the exhibition as a whole was a good one.

Dorset Downs.—Specimens of this breed appeared in the "Royal" Showyard for the first time. Four classes were provided, and prizes amounting to 60*l.* were offered. There were only fourteen entries made by three different exhibitors. In the shearling ram and ewe classes the first prizes were awarded to Mr. Wood-Homer. Messrs. Eden and Watson, who were second in both these classes, won in ram lambs, Mr. Tory being second. In the case of the ewe lambs this order was reversed.

Dorset Horn.—These sheep made a very creditable show, taking into consideration the distance from their home. In the shearling ram class, the first prize went to an exceptionally good sheep of fine type and character, which was also awarded Champion prize as the best exhibit in this section. Ram lambs made a good show, the first prize pen showing great size and strength. Shearling ewes were of very even merit, and little separated the prize winners. Ewe lambs were perhaps more variable than some of the other classes, but were altogether a good class.

Ryelands.—The first prize animal in the old ram class was a beautiful sheep, with an excellent fleece, having good flesh and standing well on his legs. The second was a very good sheep with capital fleece, a year younger, that walked well. The third prize ram had a splendid fleece, but was not quite so good on his legs as the former. The first prize sheep in the shearling ram class was a beautiful animal with good fleece and flesh, and stood well on his legs. The second prize sheep was not so good behind as the former. The third was a very good sheep

with a nice fleece, and was unfortunate to meet such good company. The first in the class for shearling ewes were a beautiful pen with excellent fleeces, good fleshed and matched like peas. A very good trio came second, but they were not quite so well matched. The third prize fell to a beautifully matched pen, but they were hardly in show condition.

Kerry Hill (Wales).—The classes for this breed were rather short of entries, no doubt owing to the Show being held so far away from their native country. The ram class brought out three entries, two of them being grand specimens of the breed. The first prize sheep had a splendid top, nice character, good fleece and was very masculine, the second was also a grand sheep of good type. The shearling ewe class had only two entries, the first prize pen being a very good trio, well matched as regards type.

Lincolns.—The sheep in this section were a very good lot, but they were not quite so forward in condition as in some years. On the whole, however, they were a credit to the breed. The winning two-shear ram (Class 247) was a fine specimen of a sire, with a wonderfully good even fleece, and he was an easy winner in a good class. Class 248 (shearling rams) was well filled and very even, Mr. Dudding winning with a fine upstanding sheep. In Class 249 (five shearling rams), a lot of well-matched sheep were shown, which were very creditable to the exhibitors. In the three shearling ewes class, Mr. Dudding showed two very equal pens which secured the first and second prizes. There was very little to choose between them, and the umpire had to be called in to decide which was best. The lambs were not quite so forward as in previous years, but were of nice quality. Class 253 (ewes in wool) brought out a very good lot of sheep, showing the great advantage of Lincolns over other sheep in their very heavy fleeces. The winners were very creditable to the exhibitor.

Leicesters.—These classes, with the exception of the shearling rams, were very short of entries. The shearling rams made a very good class, many of them being very good specimens of the breed. The first prize winner was a very good sheep, standing well on his legs, having nice flesh and bone, with plenty of wool. The other classes were very good in quality, though short of entries. The first and second prize gimmer shearlings were very good, and true to type.

Border Leicesters.—Considering that the Show was held so far from the district in which Border Leicester sheep are natives, the numbers were very satisfactory, and the quality of the exhibits of good character. The Championship was won by the first prize shearling ram, an animal suited alike for home and colonial use.

Wensleydales.—Owing to the distance from the native heath of the Wensleydale sheep, the classes were somewhat scantily filled, but contained some of the best specimens of the breed. In the aged ram class was found an outstanding winner, a wealthy sheep with a very even coat, and good on his legs. The single shearling ram class was fairly good. In the class for three shearling rams, there were only two entries, but both were of high merit. The winners were three very typical sheep. There were four entries in the class for shearling ewes, the first and second being animals well grown and characteristic of the breed.

Lonks and Herdwicks.—The Judge expresses his regret at finding the entry so small, only four of each breed being shown. The first prize Lonk ram, *County Councillor*, exhibited by Mr. David Hague, was an excellent specimen. *Pearl King*, Mr. Thomas Ireland's first prize winner in the Herdwick ram class, was a very good sheep, and won easily. The winning pen of Herdwick ewes were a good lot, and well worthy of the prize.

Derbyshire Gritstones.—In Class 267, the winner was a ram of superior size, with great length of body, standing well on his legs. His wool was of good quality except the skirts, which were rather coarse. A very handsome and typical sheep was placed first in Class 268. The first prize pen in Class 269 contained three superior shearling ewes, with excellent points and quality. The second pen were very typical ewes, and almost equal to the first prize winners. The Judge states, in his report, that these animals were the best all round shearling ewes he had ever seen, being remarkably good in type, colour, and wool.

Kent or Romney Marsh.—The Judges were gratified to find that this breed, with ninety-three entries, had the largest representation of any variety of sheep at Norwich, and altogether they considered that the animals brought before them made the best exhibit of the breed that has ever appeared at the "Royal." The first prize sheep in Class 270 was very symmetrical, with good fleece and a fair amount of bone. The second prize one was a more masculine sheep, but a trifle bare underneath, with good wool and bone. Class 271 was a very strong one of thirty-three entries. The first prize sheep was masculine in character, with beautiful wool of uniform quality. The second prize winner had also masculine character, with dense fleece. The third prize was a strong sheep with good wool. The first prize ones in Class 272, were a "matchy" pen of excellent handling and even fleece. The second prize pen were very even in size and type. The third prize winners were well matched, having good shapes, but wanted more wool on their heads. The first prize ones in

Class 273 were of good type. The second prize lot were even lambs with good wool. The winners in Class 274 were very even sheep with good wool and plenty of bone in the fore legs. The second prize ones were even, but short of bone. In the third prize pen there were two very good ones, but the other was not so good. The first prize winners in Class 275 were lambs of good type and wool. The second prize lambs were even in wool and of good character. The Champion ram, Mr. Quested's first prize winner in Class 271, was the best fleeced Kent ram the Judges had ever had before them. The Reserve ram was a two-shear of very symmetrical form, with a good fleece, but had not nearly such good wool as the Champion.

Cotswolds.—With thirty-five entries and no absentees, this breed was better represented than usual. The exhibits were good specimens, the first prize shearling ram and the first prize pen of shearling ewes being particularly so. The lambs—both ram and ewe—were well grown and promised well for the future.

Devon Long-Wools.—The twelve sheep entered were all present, and competed in the three classes provided. The quality in every case was such as to merit and receive a prize or minor card. Perhaps the ram classes were, on the whole, the strongest and more uniform in quality, whilst the first prize pen of ewes were evenly matched and well shown.

South Devons.—There was only one animal shown in Class 283 (old rams), a very useful sheep, for which the first prize was awarded to Mr. Stooke. In Class 284 (shearling rams) the first prize fell to Mr. Hoskin for a fleshy sheep with nice curly wool and rather small bone. The second prize was awarded to Mr. Stooke for a ram with good wool and plenty of bone, and rather small face. Only two entries were made in Class 285 (three ram lambs). The first prize went to Mr. Stooke for a grand pen that should make big sheep. Mr. Hoskin was awarded the second prize for a very nice pen not so heavy in their wool. A very even and typical pen of shearling ewes, with good curly coats, secured the first prize in Class 286. An excellent pen of ewe lambs, with plenty of wool and well covered over the head, were awarded the first prize in Class 287.

Dartmoors.—These sheep were shown more in uniformity as to colour than at previous Shows. In Class 288 (rams, two-shear and upwards) there were only three exhibits, but all very good specimens of the breed. Shearling rams were a good class of nine, and most of them of good wool and well fleshed. There were only two competitors in Class 290 (three shearling ewes), but they were the best the Judge ever saw of the breed.

Exmoors.—The three classes allotted to this breed had five entries in each, and the exhibits were all typical specimens with

not a plain sheep among them. In Class 291, for rams two-shear and upwards, the first prize winner had good bone and splendid wool, and should sire some useful stock. The second prize sheep was rather small, but of the right type. The third prize ram was a good sheep, but, in the Judge's opinion, his wool was too long. The shearling rams were a good class, the first, *Broford Model*, being a grand young ram that will take a lot of beating if he develops into the sort of sheep that the Judge thinks he will. In the shearling ewe class it was difficult to decide which was the best, there being very little difference between the first and second pens. They had each won a prize this year when shown together at the Devon County and Bath and West Shows. The third prize pen had the hardest wool, but they had rather poor heads. The breed of Exmoor Horn sheep has improved wonderfully since the formation of the Exmoor Sheep Breeders' Society about five years ago.

Cheviots.—Class 294 (ram, two-shear and upwards) had in the first prize winner a fine upstanding sheep, a splendid mover, with a good coat. The second was a nice gay sheep with a good head, but not so big as the first. In Class 295 (shearling rams), a stylish sheep, with a nice head and good skin, was first, and the second was a sheep moving on good legs but showing small horns. A very good ewe, with a grand Cheviot head and splendid skin, took first prize in Class 296 (shearling ewes); a good big ewe, and a grand handler with a good skin, being second.

Welsh Mountain.—Four animals competed in Class 299 (rams), all of them being good sheep and possessing the true character and type of the breed. The first prize ram was exceptionally well proportioned, and a thick animal with a fairly good coat. The second prize was awarded to a yearling of excellent promise, a deep thick-set ram with a good coat. He will no doubt be heard of in the future. The third prize went to a well coated two-year-old. In Class 300 (yearling ewes), there were five lots competing, the first prize pen being three beautiful ewes with thick coats. The second prize pen were ewes of great merit and true to type, but one of them was not perfect in the coat, and they did not match so well. The third prize pen contained ewes of good type and quality, but somewhat deficient in form and character to the pens already mentioned.

Blackfaced Mountain.—In Class 301 (Rams, two-shear and upwards) the first prize animal was a grand stamp of a Blackfaced ram, but showing age a little. The second was a big sheep with a good skin but not so well on his legs as the first prize one. A good square sheep with a good head and

style was first in Class 302 (shearling rams); a nice little sheep with a dark head and grand coat being second. A good stylish ewe, a grand handler with a splendid coat, won the premier position in Class 303, and the second was a grand ewe very little behind the first prize one.

Pigs.

Large Whites.—These made an excellent show, only sixteen of the 102 entries failing to put in an appearance. In the old boars (Class 304) an animal of great size, farrowed in 1908, full of flesh and good type was placed first, and was eventually Reserve for the Gold Medal. A typical pig, farrowed in 1909, was second. All the eleven entries in Class 305 came forward and eight received recognition. No. 2532 was placed first, and was also the winner of the Gold Medal. (See Fig. 1.) Another from the same herd was second, and both showed type, size, and quality. Class 306 (boars farrowed in 1911) was very strong, thirty-one animals putting in an appearance, many of them being of great merit. The first and second prizes both went to well-grown animals of good quality. Twelve very good sows came forward in Class 307, eleven of them being noticed. The first was a remarkably good sow and likely to follow in the footsteps of her unbeaten dam. The second was a sow of good quality and large scale. The third was a 1907 sow that has had a good career in the show yard but now showing signs of wear. Another very good entry was made in Class 308, thirteen receiving notice, and the four prizes going to one herd. It would be difficult to find a better lot of young sows for type, size, and quality. Class 309 (three sows farrowed in 1911) had fourteen entries, and a highly commendable lot. The first prize pen were a well grown and matched trio.

Middle Whites.—Class 310 contained a small but very good entry. The first prize winner and also Reserve Champion was a very fine boar of good type and quality and good on his legs. The second was a nice boar but not quite so good as the winner. The third prize went to a very useful pig shown by a new exhibitor, the Duke of Argyll. A very good lot of young boars were shown in Class 311. The first was a fine though rather massive boar of good type and quality. The second and third were very useful pigs. Class 312 was rather poor with the exception of the prize winners. The first, second and third were very matchy, and all out of one litter. They were good young boars that won rather easily. Class 313 was a very strong one, headed easily by No. 2656, which eventually captured the Medal for the best pig, a very fine sow full of quality. (See Fig. 2.) The second was very neat, but has rather lost her hair and has not so good a top as the winner.



FIG 1—LARGE WHITE BOAR WORLEIGH TURE 24TH
 Winner of Champion Prize for best Large White Boar on Show Norwich 1911
 Exhibited by THE LARD OF GLIMSMIRE



FIG 2—MIDDLE WHITE BREEDING SOW HOLLYWELL YORKSHIRE ROSE
 Winner of Champion Prize for best Middle White Boar on Show Norwich 1911,
 Exhibited by MR CHARLES SPINLER



FIG 3—TAMWORTH BREEDING SOW, "ROBERTSON VIRGINIA 2ND"
Winner of Champion Prize for best Tamworth Boar or Sow, Norwich, 1911
Exhibited by SIR OSWALD MONTGOMERY, BART



FIG 4—BERKSHIRE SOW, "RIFORD."
Winner of Champion Prize for best Berkshire Boar or Sow, Norwich, 1911.
Exhibited by MR W V JUDD.

The exhibits in Class 314 were a level lot, more numerous but not quite so good as the old sows. A sow of very nice quality with good top was first, the second was rather more lengthy but short of hair. Class 315 had a fair entry. The winners were a nice well-matched pen of straight backed gilts of the same litter as the young boars. Second honours went to a useful lot rather short of quality compared with the winners.

Tamworths.—The breed was well represented by an entry of sixty-four, and there were no absentees. The exhibits generally were well grown, of good quality, and nice colour. The Champion Gold Medal was awarded to Sir Oswald Mosley, Bart., for *Rolleston Verbena 2nd*, the first prize breeding sow in Class 319. (See Fig. 3.)

Berkshires.—In Class 322, the first prize boar was large, of nice quality and character, and an easy winner. The second prize went to a smaller boar, but he was straight, deep, and of nice character. The third was a deep pig, not quite so nice in skin and character. There were several useful boars in the Class. Premier honours in Class 323 were secured by a pig of nice length and depth and very straight, with good character. The second and third were only useful, and it was not a strong class. A useful young pig was placed at the head of Class 324. He had nice Berkshire character, and was very closely pressed by the second. This might have been a better class, but there were some useful young pigs in it. In Class 325, the first prize pig was a very grand old sow of rare length, and deep, with good character, and an easy winner. The second and third were very big useful sows, and altogether this class contained quite a nice lot of breeding sows. Class 326 was undoubtedly a very grand one, and it was noticeable what great growth sows only just about a year old have made. A young sow of great length and depth, and of beautiful character though losing coat a little, was an outstanding winner. The second also had beautiful quality and character, but was not very forward in condition. The third prize winner was perhaps the most level pig in any of the classes, but was rather too short for present-day purposes. In Class 327 there were some nice exhibits, many pens contained one or two nice pigs, but losing on the others. The winners were well matched and won easily. It was a useful class on the whole. The Championship was won by the first prize sow in Class 326, after a close fight with the first in the old boar class and the winner in the class for breeding sows. (See Fig. 4.) There were three grand pigs, youth and evenness turning the scale.

Large Blacks.—These made a real good show, all the classes being well filled with good animals, and the competition very keen. In the aged class *Dragon Disappointment* was

undoubtedly the best. (See Fig. 5.) There were a lot of good ones close behind him. Boars farrowed in 1910 made a good class of very even merit. The class for boars farrowed in 1911 was well filled, containing eighteen exhibits, but it was not so even in character and quality. A few were not quite up to the required standard, but some were of excellent promise. The aged sow class was not so well filled, only five competing, but the two leading sows were very good. Sows farrowed in 1910 proved to be an extraordinarily good class, headed by *Sudbourne Sadie*, shown in the pink of condition. (See Fig. 6.) Many others in the class were good enough to compete in the very best company. In the class for sows farrowed in 1911 it was a very close thing between the first and second prize winners, but the quality of the former just put them into first place. Taken altogether it was a very fine exhibit, and a credit to the breed.

Lincolnshire Curly-coated.—Class 334 contained rather a small entry. The specimens exhibited were scarcely up to the average of the other classes shown. Class 335 showed improvement on the previous class, both in number and uniformity of the exhibits, and contained some good animals. Class 336 was well filled, and an improvement on the previous classes, containing some remarkably good animals and also the Champion of the boar classes. (See Fig. 7.) Several animals in this class should give a good account of themselves as coming sires. Class 337 was well filled. The exhibits were uniform in type, of great size, and good throughout. The first prize sow was also awarded the Female Championship. (See Fig. 8.) The Judge questions if at any Show since prizes have been offered for this breed has such a splendid lot of sows met in competition. Class 338 was well filled, and contained some good specimens and several animals of great promise. Although scarcely so uniform in type, they were a very commendable class. Class 339 contained many animals of great merit. The first prize trio were remarkable exhibits and outstanding winners, while the second and third prize winners were very good specimens. In concluding his report the Judge draws attention to the great and general improvement in these classes since he judged at the Royal Agricultural Show at Lincoln in 1907. Greater attention has been paid to legs and feet—then a serious defect—and other weak points have been eliminated; in fact a general improvement in all the classes was very noticeable.

POULTRY, INCLUDING DUCKS, GESE, AND TURKEYS.

With 1,218 entries, or 23 more than at Liverpool in 1910, a new record was created in this section. The show of poultry

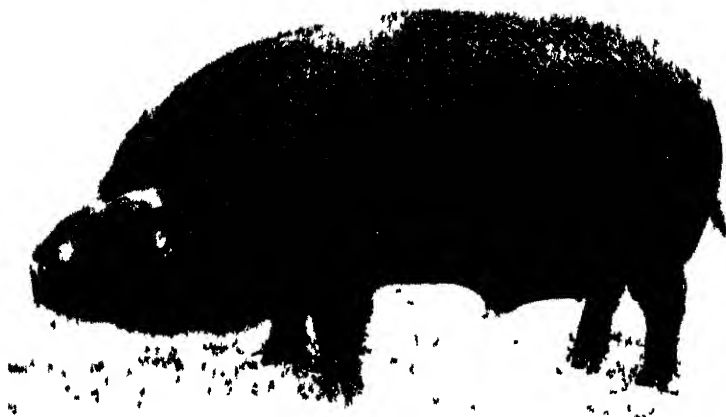


FIG. 5—LARGE BLACK BOAR "DRAGON DISAPPOINTMENT"
Winner of Champion Prize for best Large Black Boar, Norwich, 1911.
Likelihood by MR. TIRAH T. HOOTEN

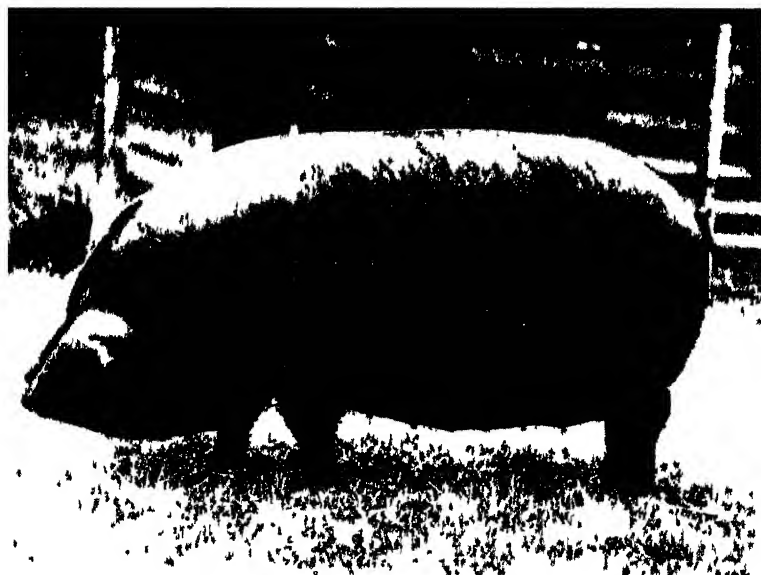


FIG. 6—LARGE BLACK SOW, "SUDBOURNE SADIE."
Winner of Champion Prize for best Large Black Sow, Norwich, 1911
Likelihood by MR. KENNETH M. CLARK.



FIG 7—LINCOLNSHIRE CURLY-COATED BOAR MARSHLAND DRAGDROUGHT
 Winner of Champion Prize for best Lincolnshire Curly-coated Boar, Norwich, 1911
 Exhibited by MR. LEOPOLD C. HARVEY



FIG 8—LINCOLNSHIRE CURLY-COATED BREEDING SOW, "LONDERSBOROUGH ROYAL DUCHESSES"
 Winner of Champion Prize for best Lincolnshire Curly-coated Sow, Norwich, 1911
 Exhibited by MR. LEOPOLD C. HARVEY

was without doubt the best ever held under the auspices of the Royal Agricultural Society.

The prizes were awarded by five Judges, amongst whom the duties were divided as follows:—Mr. J. F. Entwistle judged the Game Classes; Mr. W. W. Broomhead judged the Langshans, Plymouth Rocks, Orpingtons, Dorkings, Sussex, and Anconas; Mr. R. Anthony judged the Wyandottes, Minorcas, and Leghorns; the Rev. C. H. Hildebrand judged the Yokohamas; and Mr. Edward Kendrick judged the Brahmas, Cochins, Malines, Campines, French, Ducks, Geese, and Turkeys.

Mr. Entwistle considered the *Old English, Sumatra*, and *Indian Game* the best collection seen at a summer show. The *Modern Game* with but two exhibits per class were disappointing, but the quality was high, and probably the entry will be much better another year. The *Bantams* were most interesting and a beautiful collection of the choicest specimens. Mr. Broomhead reports that *Langshans* were good, and *Plymouth Rocks* turned up well, some rare good youngsters being shown. *Orpingtons* were far the best classes in the whole section. The *Dorkings* were decidedly poor, *Sussex* were very well supported and proved a popular breed, and *Anconas* were up to the usual. The quality throughout was particularly good, and the "Royal" of 1911 ranked as one of the very best poultry shows of the season. *Wyandottes*, Mr. Anthony writes, made a good show with an entry of over two hundred. The laced classes, though not numerous, were full of quality, the winning Gold cock being about the best Wyandotte present. The winning Silver hen, one of the best ever bred, was in grand feather. Laced cockerels contained only three birds, but the winner was full of promise. Pullets were headed by a very forward Silver, closely followed by a good Gold hardly ready. Whites made a capital show both for quality and numbers, and the winning birds were of the highest quality, both excelling in type and colour. The two chicken classes for Whites contained some really promising birds. Many were a trifle undeveloped but of extra good quality. The winning pullet was undoubtedly the best the Judge ever saw at the time of the year. Blacks made a good show in themselves, and the advance in soundness of colour was easy to see. The pair of winning old birds were two really fine specimens and were well to the front. Partridges contained a few good birds, though the numbers have been larger. Columbians were two good classes, whilst Blues and the variety classes were full of quality, especially the pair of *Bufs*. Minorcas were not large in numbers, though the quality was fairly good. The winning cock was easily the pick of the lot, being one of the best seen out for a long time. The hen class

contained several very large birds, but hardly of the quality that have been seen at the "Royal." *Leghorns*, with eight classes, contained some really good birds. Whites came first with thirteen entries in the two classes. The winning cock stood out for type and head, the second being hardly as large and not quite so pure in colour. Hens were a grand class, the winner being a really good headed bird of pure colour, perfect type, and shown very fit. Brown *Leghorns* were good, the winning cock being about the best *Leghorn* exhibited. His colour was superb, with grand feather and a capital head. Hens were a good class, being headed by a grand coloured pullet closely followed by a good hen failing slightly in colour. Blacks were two good classes, the pick being the winning hen, which stood out for size and head. The two variety classes contained several good birds, the winning Buff cock being an extra good bird for the time of the year. The winning Blue hen was also shown in grand form.

Mr. Hildebrand, in his report, said it was disappointing that the *Yokohamas* were not better represented, considering the great advance in numbers and public favour that these fowls have made in England during the last few years. The six classes mustered only twenty-two entries, while the quality of the birds themselves left much to be desired. The Bantam classes showed an improvement on last year.

Mr. Kendrick reports that the first prize *Brahma* cock was a very fine bird, as also was the first prize *Cochin* cock. Hens were very good in the buffs, a grand bird being first. *Campines* made two big classes of good birds. The first prize *Faverolle* cock was one of the best birds in the Show. There was a good entry of nice birds in the A. O. V. classes. Ducks made a very small entry, and there was room for great improvement here. Some good young birds were found in the *Rouen* drake class. The Geese exhibited were large birds, but out of feather. The Turkeys were two good classes, the first prize hen being very large.

PRODUCE.

Butter.—Mr. Blackshaw, the Judge, was disappointed in the number and also in the general quality of exhibits placed before him. That so great an industry should be represented at the National Show by so poor an exhibit is undoubtedly very unfortunate. There were a few first-class butters, but the majority of the exhibits were below what might be termed average quality.

Cheese.—The quality of the Cheddars was on the whole considerably above the average, taking into consideration the season of the year. A few of the exhibits were rather sweet made and tough, and in consequence the flavour was not fine.

The prize winning lots were quite outstanding in flavour and texture, and in appearance well set up. The first prize lot was perhaps the most outstanding exhibit in the cheese section, and showed beautiful quality, with appearance and finish all that could be desired. The Cheddar truckles was rather a small class. The prize lots were excellent samples of this variety of cheese. Cheddar makers would obtain more uniform results in the early part of the year if more attention was given to the ripening agent used in the milk. The Cheshire Classes, 481 and 482 (white and coloured), were fairly well filled. The quality of the coloured Cheshires was somewhat irregular and nothing of outstanding merit was found. The principal fault was tightness with over acidity and dulness of colour. The tightness might, to some extent, be accounted for by the extremely hot weather experienced during the early part of the season, which has the effect of hurrying on the acidity change, and results in tightness or poorness in the matured cheese. Cheshire makers should guard against making cheese of this type, particularly in the early part of the season when milk is poor in fat and in consequence easily affected by acidity. The white Cheshires were very similar in quality to the coloured, and generally showed similar faults, nothing of outstanding quality being found. Double Gloucesters were a small class and the quality very irregular, nothing that could be described as fine was found. The class for Lancashire cheese was also a small one, but several useful samples were exhibited. The first prize lot might be described as a useful sample. The Stiltons were excellent, and possibly more regular in quality than any other class in the cheese section. The prize lots were quite outstanding, and with maturing would develop all the features of prime Stilton. The appearance and finish of the cheese was in every way creditable.

Cider and Perry.—Taking the section as a whole, there did not appear to be the improvement in the exhibits that might have been expected after so much has been done to bring into notice the improved modes of manufacture, and to emphasise the supreme importance of absolute cleanliness in connection with everything connected therewith. There were many instances of faulty casks and dirty bottles having been used, and of preservatives, sweets, and possibly alcohol having been added. Two samples in Class 487 were disqualified, but the remainder were of fine quality, and one was R.N. for Champion. In Class 488, there was a great amount of solids, in one case an excessive amount, but although no exhibit was disqualified, there was an opinion that in that case the amount was not natural. The entries of Old Cider (Class 489) were small, and two of these were quite out of condition. In Class 490, one entry was

disqualified for the addition of preservatives. The amount of solids was very great in one entry in Class 491, and so disproportionate that it was disqualified. With this exception the class was very good, the winning exhibit gaining the Championship. Class 492 was not satisfactory, bad colour and the addition of preservatives being noticeable. The whole of Class 493 was struck out on account of excess of gravity. Class 494 was good, one sample only bearing trace of preservatives. The Perry seemed true to its kind, the character of some of the entries being quite distinct.

Details of the chemical analyses of the samples for which prizes were awarded are appended :—

CLASS 487.—*Cask of Dry Cider, not less than 18 and not more than 30 gallons, made in 1910.*

No.	Specific gravity	Alcohol	Solids	Acidity	Awards
		per cent.	per cent.	per cent.	
174	1·015	4·00	5·20	·268	1st Prize
172	1·014	5·50	5·37	·425	2nd Prize
167	1·015	4·60	5·31	·428	3rd Prize

CLASS 488.—*Cask of Sweet Cider, not less than 18 and not more than 30 gallons, made in 1910.*

181	1·025	3·70	7·65	·388	1st Prize and Reserve for Cup
180	1·025	4·00	7·62	·38	2nd Prize
179	1·026	4·05	7·99	·438	3rd Prize

CLASS 489.—*Cask of Cider, not less than 18 and not more than 30 gallons, made previous to 1910.*

194	1·032	3·60	9·32	·318	1st Prize
195	1·033	3·30	9·56	·328	2nd Prize
196	1·026	4·00	7·83	·335	3rd Prize

CLASS 490.—*One Dozen Dry Cider, made in 1910.*

204	1·014	5·17	5·36	·375	1st Prize
205	1·006	5·20	3·31	·355	2nd Prize
206	1·002	6·00	2·32	·368	3rd Prize

CLASS 491.—*One Dozen Sweet Cider, made in 1910.*

233	1·034	2·50	9·64	·338	1st Prize and Challenge Cup
217	1·027	3·20	8·14	·308	2nd Prize
229	1·035	2·57	9·67	·40	3rd Prize

CLASS 492.—*One Dozen Cider, made previous to 1910.*

No.	Specific gravity	Alcohol	Total solids	Acidity	Awards
		per cent.	per cent.	per cent.	
244	1·035	2·85	9·92	·50	1st Prize
239	1·032	3·55	9·47	·308	2nd Prize
242	1·034	2·85	9·70	·274	3rd Prize

CLASS 493.—*One Dozen Dry Perry.*

[NO AWARD. Gravity too high in all cases.]

CLASS 494.—*One Dozen Sweet Perry.*

257	1·045	1·90	12·36	·51	1st Prize
264	1·035	2·50	9·98	·469	2nd Prize
266	1·032	3·40	9·62	·63	3rd Prize

Wool.—While some of the sections were remarkably good, the exhibits as a whole were only about the average. In Class 496 (Lincolns) four exhibits were disqualified for not having complied with the conditions as to washing of fleeces, and again in Class 505 one of the best exhibits was disqualified for the same reason. In Class 502 three exhibits were disqualified for being tied with string, and the Judges hope this will help to kill the reprehensible practice of tying with foreign matter. In several instances, particularly in the Scotch class, the Judges had doubts about condition 85 having been observed, but in every case unless they could feel quite certain, the exhibitor was given the benefit of the doubt.

Bread.—The offer of prizes for bread at the Norwich Show was a new departure for the Society, and no less than 112 entries were received. Each exhibit consisted of two 2-lb. loaves baked in tins and made from stone-ground flour. Mr. Kirkland, who acted as Judge in this section, has made the following report:—

The number of entries—112—was very satisfactory under the conditions on which the competition took place. Although there are still many mills with stone-grinding plants, there may have been some people who would have entered, but who were prevented by their inability to get supplies of suitable flour. So far as the competitors amongst professional bakers were concerned, the terms of the competition may not have been sufficiently well known to them.

About half of the competitors were commercial bakers, and amongst those were several who, from their experience as competitors, might be classed as professionals. The first and third prizes were obtained by bakers whose names are well known in the trade as competitors; the second prize-winner is not so well known. The Reserve Number and Highly Commended went to a youth who is a student at the National Bakery School, London. The first place amongst five other Highly Commended was obtained by a lady, and a well-known prize-winning firm of bakers was second in this grade. All the four

"commended" exhibits were the work of female bakers. Amongst the entries of the non-successful were the names of some of the largest bakery firms in the kingdom.

The great variation in colour and character of the loaves shown was the result, I think, of the wide conditions of the competition. There is no reason to believe that any of the flour used was other than "stone-ground," but as no stipulation was made as to the fineness of "dressing," all sorts of meals and flours, from ordinary wholemeal to fine white flour, were used. I doubt if there would be much greater uniformity in this matter even if the stipulation had been made that the flour used should consist of a certain definite percentage of the weight of the wheat, unless some reservation had also been inserted as to the kind of wheat to be used. In such case it might have been still more difficult for the ordinary householder to get supplies of flour according to conditions.

Hives, Honey, and Bee Appliances.—Class 506, with three entries, contained neat and highly finished collections of hives and appliances. The outfits for beginners displayed a very wide range in choice and price. Classes 507 and 508 produced many hives of good workmanship in both sections though there was a falling off in the entries as compared with last year. Class 509 (extractors), and Class 510 (observatory hives), contained two exhibits apiece for the six prizes offered; both were good. No strikingly useful novelties were shown in Class 511 this year. The honey classes were well filled and much of the honey exhibited in them was of excellent quality and mostly produced in the present season. Unfortunately some of the finest sections of comb honey were disqualified owing to the infringement of the rule against overlacing. This is not a matter of trivial importance, as it involves the main human operation in the outturn of the exhibit. The extracted honey was also much more in evidence than last year, and there was no falling off from the high standard of quality then attained. The trophies of honey (seven exhibits) were excellently staged, the premier award falling to a collection of superb light honey produced this year. Wax, vinegar, and other products of honey were up to the standard of recent years, but the entries were few. Taken altogether there has not been a finer show in this department in recent years. Several demonstrations were given daily by Mr. W. Herrod, the Expert of the British Beekeepers' Association, who attracted and interested large audiences.

COMPETITIONS.

Butter-making.—The Judge reports favourably on the work of the competitors in the six competitions which took place on Monday, Tuesday, and Wednesday of the Show. On the whole, the candidates, though a little slow, did useful work, and all possessed a good knowledge of modern methods of butter-making. The candidates were drawn from seven different

counties, and the arrangements made for the conduct of the competitions were most satisfactory. The competition of prize winners in the previous classes for the Championship was remarkably good, and the Judge was most pleased with the smart and methodical manner of the competitors. The work was well and carefully done in quick time, and the only fault noticeable was in the making up of the butter into rolls, &c., which was generally not so good as it might have been.

Horse-shoeing.—Excellent work was done by the different competitors in the Horse-shoeing Classes at Norwich. In all three classes—Heavy Horses, Hunters, and Roadsters—the competitors showed great ability, and it was only after considerable trouble and taking into consideration every minute detail, that the Judges were able to make their awards, the work in the majority of cases being so near perfection.

Horticultural Exhibition.—Having regard to the fact that the season of 1911 was the most trying one experienced for some time for horticultural produce of all kinds, the Show generally was an excellent one. The collection of Hardy Perennials (Class 8) was, in the opinion of the Judges, one of the finest ever staged at any Show. The Groups of Miscellaneous Plants and Orchids, though not numerically strong, were of excellent quality throughout. The Sweet Peas made an imposing and pleasing display in all the classes. Begonias, Carnations, and Roses were represented by the choicest varieties, and were in all cases well staged. Class 5 was a new departure in arrangement for this class of plants, and has great possibilities of making a very fine feature if continued in the future. The quality of the vegetables was good, but the classes were rather limited. The most disappointing class was that for fruits. What should have been one of the finest features of the Show was spoiled by there being only one exhibit, and this not up to the quality the Judges expected to see for such a good prize. The non-competitive exhibits made a splendid display of the most varied character, and embraced excellent hardy trees and shrubs from Messrs. Fisher, Son & Sibray; stove plants from Messrs. Veitch; roses from Messrs. B. Cant & Hobbies, Limited; sweet peas from Messrs. Dobbie & Co., Mr. Breadmore, and Mr. Bolton; vegetables from Suttons, &c., &c.

The Norwich Show of 1911 will long be remembered as one of the most representative exhibitions of live stock and machinery that has ever been held under the auspices of the Society.

The generous hospitality displayed by the Lord Mayor of Norwich, the High Sheriff of Norfolk, Mr. Russell Colman,

Mrs. Stuart and Miss Colman greatly added to the pleasure of those who visited the Show.

Mr. Henry Giles, the agent for the Crown Point Estate, like his predecessor, the late Mr. Garrett Taylor, on the occasion of the Society's earlier visit, was indefatigable in doing everything possible to make the Show a success. The Local Honorary Secretaries—the Town Clerk, Mr. Miller, and Mr. Edmund Beck—too, rendered most valuable services, both in the preliminary preparations and during the Show.

In addition to a Showyard with such natural beauties as that possessed by the site at Crown Point, the County of Norfolk also provided the Acting President for the year. Sir Ailwyn Fellowes, in addition to being the Deputy of His Majesty, was Chairman of the Norwich Local Committee, and was also very closely identified with the railway arrangements as Deputy-Chairman of the Great Eastern Railway Company.

The following letter, received by the Acting President, forms a very happy conclusion to the Report on the Norwich Show of 1911 :—

Buckingham Palace,
June 30th, 1911.

My Dear Fellowes—

The King wishes me again to convey to you the expression of his sincere thanks for all that you have done during the past year on his behalf as Acting President of the Royal Agricultural Show, and especially for your efforts to make his visit to the Show on the 28th inst. a most enjoyable one.

All the arrangements for his reception and general comfort were greatly appreciated by His Majesty.

The King congratulates you upon the very large attendance in the show-yard, and he is much gratified to see by the papers that the number of visitors yesterday was almost double that of the corresponding day of last year's show.

Believe me,

Yours very truly,

ARTHUR BIGGE.

The Right Hon Sir Ailwyn Fellowes, K.C.V.O., Acting President, Royal Agricultural Show.

THOS. MCROW.

16 Bedford Square,
London, W C.

THE TRIALS OF POTATO DIGGERS AND POTATO SORTERS.

CONSIDERING the very large amount of labour required for digging and afterwards sorting potatoes, and the great cost when a large acreage is grown, the Council of the Royal Agricultural Society did well in arranging that substantial prizes should be offered for "Potato Diggers" and "Potato Sorters," in connection with the Norwich Meeting, and that field trials should be held later in the year when the tubers ripened.

A first prize of 20*l.* and a second prize of 10*l.* brought a good entry of fourteen potato diggers, all except No. 5 making an appearance on the appointed day.

The Judges appointed were: Mr. Harry Hope, M.P., Barney Hill, Dunbar, N.B.; Mr. Joseph Bettinson, Needham Lodge, Elm, Wisbech; Mr. William Coulman Brown, Appleby, Lincolnshire (North).

Printed instructions were sent to the competitors. Among other things, they were requested to make their own arrangements for any preliminary trials.

CLASS I.—POTATO DIGGERS.

First Prize, 20*l.* Second Prize, 10*l.*

LIST OF ENTRIES.

BLACKSTONE & Co., LTD., Stamford.

1.—Potato Digger, of the kind in which the potatoes are moved to the side of the row by a number of forks revolving behind a share, 15*l.*

ALEXR. JACK & SONS, LTD., Maybole, Ayrshire.

2—"Caledonian" Potato Digger, R.A.S.E. First Prize, Leicester, 1896, fitted with ball bearings, 14*l.* 10*s.* If with detachable seat, 10*s.* extra.

3.—New improved "Empire" Potato Digger, 16*l.* 10*s.* If with detachable seat, 10*s.* extra.

4.—New "Imperial" Potato Digger, 16*l.* 10*s.* If with detachable seat, 10*s.* extra.

KUXMANN & Co., 23 Bucklersbury, London, E.C.

5.—"Kuxmann" Potato Digger, 16*l.* 5*s.*

MARTIN'S CULTIVATOR COMPANY, LTD., Lincolnshire Iron Works,
Stamford.

6.—Martin's Patent Potato Digger, 14*l.*

7.—Martin's Patent Potato Digger, 15*l.*

244 *The Trials of Potato Diggers and Potato Sorters.*

POWELL BROS. & WHITAKER, Cambrian Iron Works, Wrexham

8.—Vertical Fork Potato Raiser with driver's seat, six forks, fitted with hardwood handles, 15*l.* 10*s.* Extras, if required : Disc weed cutter, 1*l.* Net screen, 15*s.*

9.—Side Lever Fork Wheel Potato Raiser, with 12 revolving forks complete, with catch wheel or net screen, 14*l.* 10*s.* Extra disc weed cutter, 1*l.*

10.—Side Lever Vertical Fork Potato Raiser, fitted with six digging forks and vertical link motion, 15*l.* Extra disc weed cutter, 1*l.* Net screen, 15*s.*

RANSOMES, SIMS & JEFFERIES, LTD., Orwell Works, Ipswich

11.—Ransomes' Rotary Potato Digger, with fixed tines and net guard, 14*l.* 10*s.* Disc coultter extra, 15*s.*

12.—Ransomes' new Potato Digger, No 12. 16*l.* 10*s.*

13.—Ransomes' new Potato Digger, No 11 (Phillips' Patent), 17*l.* 10*s.*

DAVID WILSON, East Linton, Prestonkirk.

14.—Potato Raiser, lifts the whole crop and leaves the tubers on the top of the drill where grown and will not damage the tubers, 20*l.*

Messrs. Dennis & Sons, of Kirton, placed at the disposal of the Society a field of Evergoods, close to Littleworth Station, twelve miles from Peterborough and six from Spalding, on the Great Northern Railway, and thither, on Tuesday, September 26, a large concourse of interested visitors wended their way, some of them as early as 9 o'clock, to witness the trials.

At the Leicester Meeting in 1896, where a similar competition took place, the soil was full of stones, many of which so resembled potatoes, that a machine exhibited there for "gathering and sorting" could not distinguish one from the other. The land at Littleworth was *per contra* devoid of stones, being in the Fen country, with the venerable pile of Croyland Abbey conspicuously looming in the distance.

The Society had arranged fourteen equal plots, with a few rows taken out between each, lots being drawn as to the position of each machine.

To give the Judges a chance to examine the working of the machines thoroughly, only two competitors were allowed out together, and copious notes were taken of the results, such as damage by the share, or by the revolving tines, the distance the tubers were thrown, the mode in which they were placed for facility of gathering, the manner the tops were cleared, and many other items.

The Engineer's assistant superintended the forking over of a measured piece in each plot, to form an opinion as to the number of potatoes left or covered up.

As a result of severe trials and a hard day's work, six machines were eliminated, the Stewards being asked to arrange for the following seven machines to compete again the next morning :—

- | | | |
|-----|-----|--|
| No. | 1. | Blackstone & Co., Stamford |
| " | 4. | Alexr. Jack & Sons, Maybole, Ayrshire. |
| " | 6. | Martin's Cultivator Co, Stamford. |
| " | 7. | " " " " |
| " | 8. | Powell Bros. & Whitaker, Wrexham. |
| " | 10. | " " " " |
| " | 13. | Ransomes, Sims & Jefferies, Ipswich. |

It will be noticed that all the machines popularly called "Spinners" were at once thrown out ; they have a revolving wheel behind the share, with forks rigidly fixed, which strike the row and throw the potatoes out. On this land they caused much damage by bruising, and had to give place to one or other of the machines with feathering action.

This movement resembles the way in which the paddles of a steamer enter and leave the water vertically, thus avoiding a bang on taking the water and a splash on leaving it.

Since the first application of this principle to potato raisers, many most clever movements of one sort or another have been devised, almost all showing to great advantage over the old spinner.

Like the paddles, as stated above, their tines enter the soil more or less vertically, leaving it in a somewhat similar manner, and if the speed be correct, the soil and tubers are quietly thrown out and deposited (by the best machines) in a fairly narrow row, and thus in a good position for gathering.

A disc haulm or weed cutter, usually called a "skief," and other devices were fixed on some machines, but as there were few tops and weeds their action or otherwise did not show to any great extent.

The seven machines were all run afresh on the Wednesday morning, and their working most critically noted by the Judges, who were quite unanimous in their opinion.

The final decision was withheld until the results of the dynamometer trials, and the weights of the several machines were brought in by Mr. Courtney, the Society's Engineer.

The first prize was awarded to Martin's Cultivator Co., Ltd., Stamford, for machine No. 6, and the second prize to Blackstone & Co., Ltd., Stamford, for machine No. 1.

Messrs. Martin's first prize machine is well and substantially constructed, although only weighing 6 cwt. 2 qrs. 14 lb., such lightness combined with strength being due to the free use of wrought steel and malleable iron. The draught, principally owing to the above reasons, was low, but the silent, steady working was helped by the five to one bevel wheels running entirely enclosed in a bath of oil ; the bearings, with ample wearing surface, being well capped to prevent the entry of grit.

Three tines of a specially curved shape were fitted to each of the four digger arms, revolving just behind the share, and with the aid of the peculiar feathering action the tubers were quietly dug, and well deposited ready for the pickers, very free from damage.

All adjustments necessary to enable the machine to be worked properly in various soils and different widths of drill, are very easily and quickly made, after which all the driver has to do is to put the machine in and out of work by a

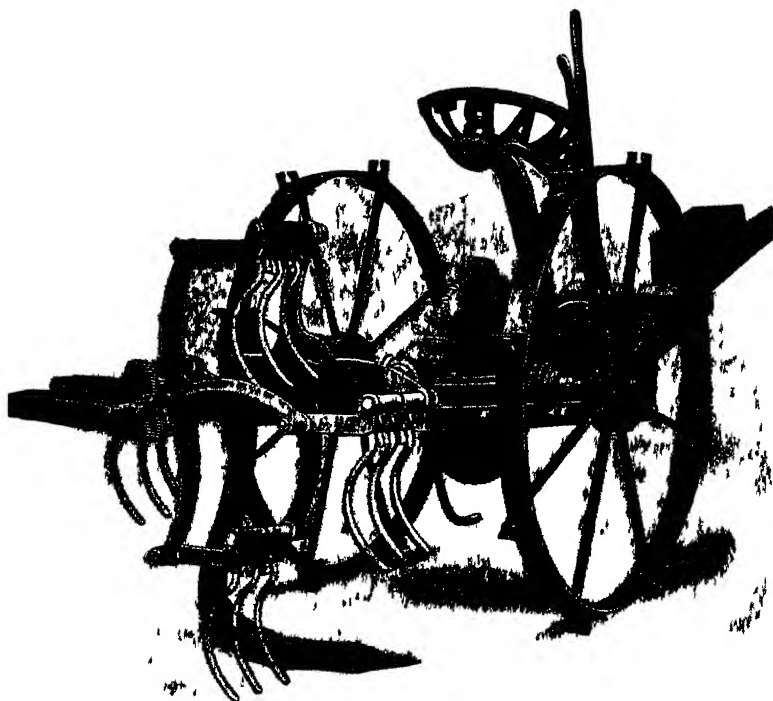


FIG. 1.—Mufin's First Prize Potato Digger

convenient hand lever, which is quite easy to operate, owing to the machine being properly balanced, and to the construction of the frame, by which the driver's weight is utilised for lifting.

The raiser is usually sent out fitted with a hook for clearing a way through the tops and weeds, to enable the stem of the share to pass without clogging. This hook is recommended by the maker in preference to a skief, owing to the liability of

the latter to cut a number of potatoes, but a skief can always be fitted for those who prefer it.

Messrs. Blackstone & Co.'s second prize raiser was of a heavier type than that which obtained the premier position, but the driver elected to walk instead of occupying the seat provided. The Engineer noticed that the draught was raised about 60 lb. if the attendant rode.

The feathering action of the eight slowly revolving forks was somewhat similar to that used so successfully by the firm on their swath turners, and was admirably adapted for quietly digging the tubers and depositing them in a limited width without much damage. The

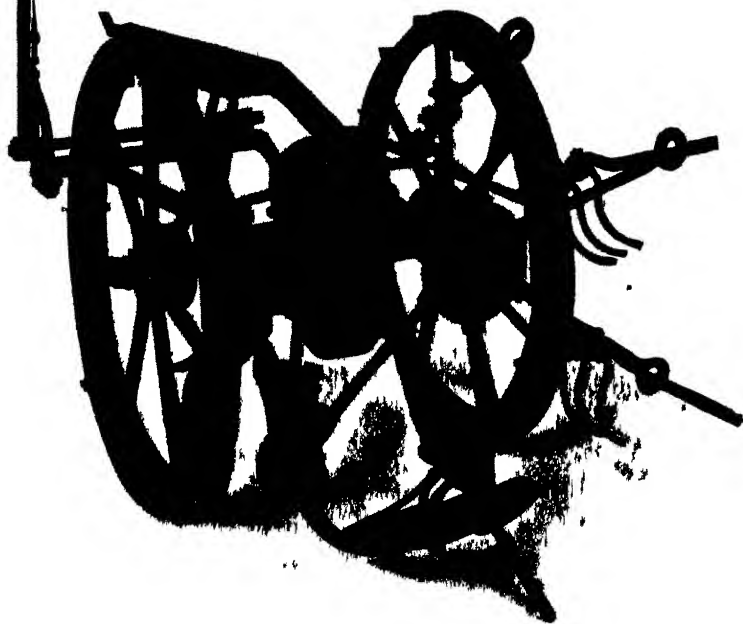


FIG 2—Blackstone's Second Prize Potato Digger.

number of wearing parts is very small, each fork arm having only one working joint. The Judges were asked afterwards to inspect the working of an adjunct to this machine, which was supposed to clear the way, and thus allow several rows to be dug without waiting for the previous ones to be picked; it was not, however, quite a success.

Great interest was shown in the machine No. 14, by David Wilson, East Linton, Prestonkirk, and there were great expec-

tations from it. All the other machines must go round a plot, but this one was supposed to open out its own work. Alas ! it could not proceed many yards, being blocked by the tops, although they were not strong.

The Exhibitor remarked that all tops should be pulled, and asked if we would judge the machine when he had cleared a few rows ; accordingly, we agreed to inspect the work of the raiser, although, of course, it was out of the competition.

Under these conditions it made excellent work, leaving the tubers undamaged, in a nice narrow space, the width of the row, and most handy to gather, better than any other machine, but it could not move when the tops were there.

Growers could not find labour at such a busy time to clear away the tops ; moreover, a few tubers would get exposed, and in frosty weather destroyed.

The Fen soil of the trial field was so dry and friable that it might have been made especially to provide an easy passage for the raisers during the competitions.

The Judges, who, it will be noted, live at great distances apart, and farm very diverse land, were all, I believe, wishful that there had been a little strong or heavy stony land on which they could have tried the best machines. It does not follow that the results would have been different.

Some of the competitors seemed to wish their mechanic to accompany their raisers to adjust or advise en route, but ample opportunity had been given for trials beforehand. On a farm the driver alone has to do the work, so at Littleworth, when an extra man was sent, the fact was noted.

CLASS II.—POTATO SORTERS.

First Prize, 10*l*. Second Prize, 5*l*.

LIST OF ENTRIES

COOCH & SON, Commercial Street, Northampton

15.—Potato Sorter, No. 4, 5*l*. 10*s*., with sorting platform for removing blight, 7*l*. 10*s*.

16.—Potato Sorter, No 5, 7*l*. 5*s*., with sorting platform, 9*l*. 10*s*.

J. B. EDLINGTON & Co., LTD., Phoenix Iron Works, Gainsborough.

17.—Potato Sorter, 7*l*. 15*s*

GEORGE H. LAWSON, Murrow, Wisbech.

18.—Potato Sorter, 2*l*. 5*s*.

WALTER NESS, King's Kettle, Fife.

19.—"The Eclipse" Potato Sorter, sorts into three sizes at one operation and delivers into bags, 14*l*.

DAVID WILSON, East Linton, Prestonkirk.

20.—Potato Sorter, mounted on wheels, and makes three separations, 10*l*. 10*s*.

The Judges were occupied after luncheon on Wednesday, September 27, in the trials of the above six sorters, which were entered for competition, and all of which put in an appearance.

The owners were called together to arrange procedure, and told that 2 tons of "Evergoods" would be put down for them, and that they were to weigh the ware up in bags, take the seed out to the size of $1\frac{3}{4}$ by $1\frac{1}{2}$ in., and place the diseased and pig stuff on a heap.

Alas! (*sic*) Messrs. Dennis & Sons had no disease in their crop, so the foreman was asked if he had any "Early Rose" (which are pink), and 2 cwt. of these were put into each heap by way of subterfuge, and the competitors told to sort them out as if diseased.

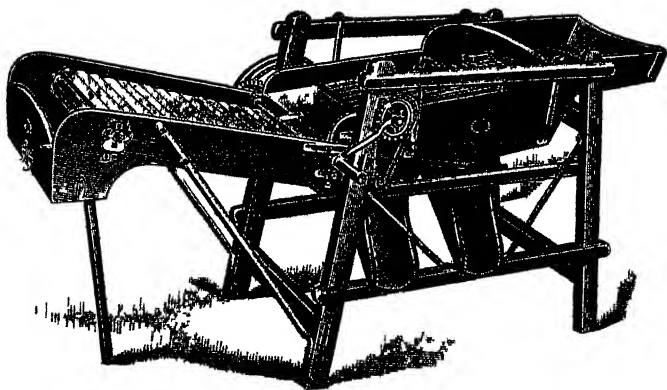


FIG 3—Cooch's First Prize Potato Sorter.

A mechanical sorter may divide the tubers into ware, seed, and chats perfectly, but human aid must be brought in to take out the damaged and diseased, which in bad years may often amount to 25 or more per cent.

Hence, midst many other points noted by the Judges, such as time, power, and labour required, especial cognizance was taken as to the opportunities the workers had of seizing blights as they passed along the riddle or up the elevator to the bags. Circular or hexagonal riddles perform give no chance of this being done until they reach the elevator. The trials amply showed that for this purpose flat riddles are superior.

At a given signal three of the above machines, Nos. 15, 17, and 18, attacked their respective heaps of 2 tons.

Messrs. Edlington, No. 17, finished with the help of five men and no manager in forty-nine minutes, although the breakage of a link in a chain delayed them a short time.

Curiously enough an assistant was at once seen to be leaving the pink ones amongst the seed, but on colour blindness being found to be the cause, an exchange of attendants soon put matters right.

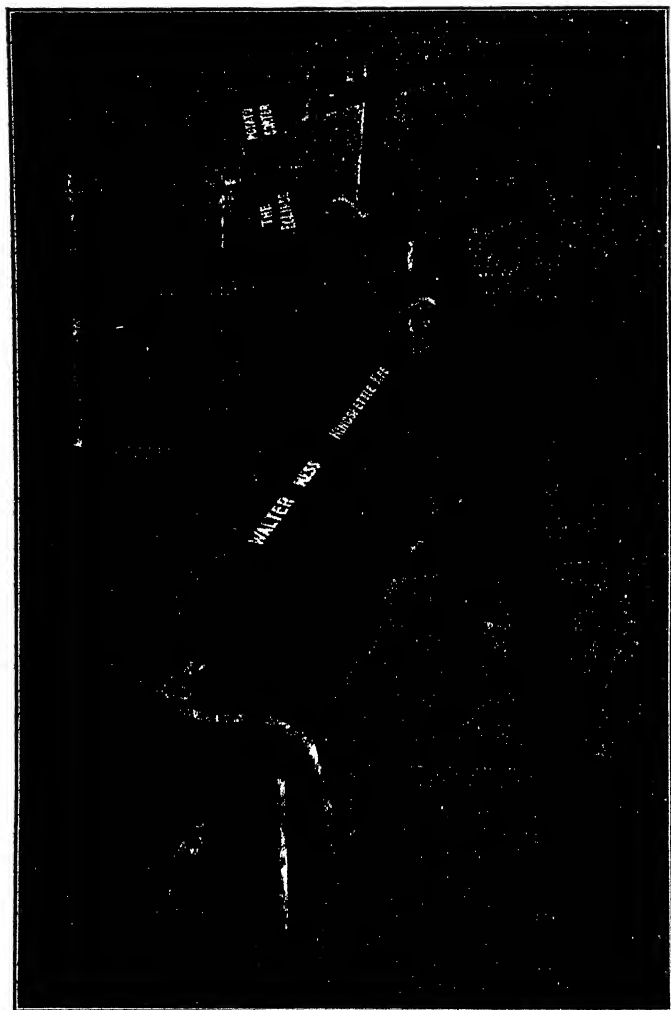


FIG 4 — Walter Ness's Second Prize Potato Sorter

Their rotary screen was supposed to take out the seed and chats, but at the pace attempted, a good many slipped past into the ware.

An especially good point in this machine was the room and facilities given for sorting disease from the seed as they fell through the riddle.

Messrs. Cooch, with No. 15, their small machine, did the work well in fifty-one minutes, with five men and a manager. A little time was lost in picking up the scattered tubers at the finish.

This was a machine for a small farm, and diseased tubers could be picked out at a reasonable pace.

George H. Lawson, with a small hand machine, No. 18, elected to tackle the 2 tons all by himself, but only getting 7 cwt. of ware in an hour, he was told to stop.

If this man could have brought his wife and a big lad it would have been interesting to small holders to see what they could have done. As it was, by himself, he was beaten.

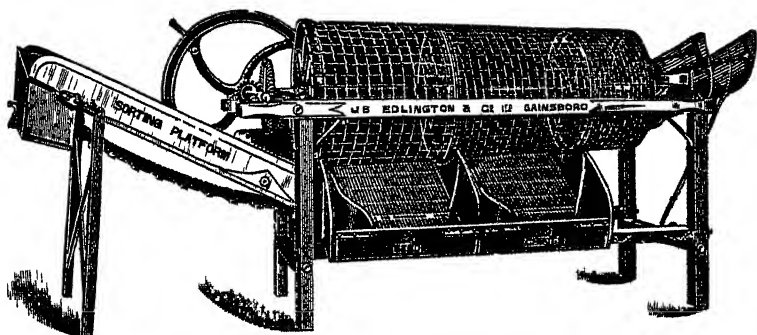


FIG 5—Messrs Edlington's Cylindrical Potato Sorter

After this the potatoes were re-mixed, and the remaining three machines tried.

No. 16, Messrs. Cooch & Son's large sorter, catalogued at 9*l.* 10*s.*, made excellent work in a very short time, only taking twenty-three minutes, with six men and a manager, to get the 2 tons sorted and weighed up.

The shoe containing the riddles worked nicely on its hangers, and the handle was easily turned. If the blights were very numerous, there would be room for three or four persons to stand by and pick them out.

The first prize of 10*l.* was deservedly won by this machine, the larger of their two exhibits.

No. 19, a large and somewhat expensive machine, catalogued at 14*l.*, exhibited by Walter Ness, had the well-known zigzag motion imparted to the riddle and a very long elevator, which gave a good chance to get the diseased tubers out. Altogether it did the work well with six men in thirty-five minutes, and was awarded the second prize of 5*l.*

A useful appliance could be added to this sorter, facilitating the separation of large seed, such as $2\frac{1}{4}$ inch, a size often sent to England by the Scotch growers. Without it, when taking such a large proportion of seed out, the exit of such a machine is apt to be somewhat blocked.

David Wilson, East Linton, Prestonkirk, brought his Sorter No. 20, catalogued at 10*l.* 10*s.*

It had a revolving hexagonal riddle, but many seed passed through into the ware, from which they failed to get sorted when travelling up the elevator. Time, forty-one minutes.

The Judges wish to thank the Hon. J. E. Cross and Mr. Luddington, Stewards in charge for the Society, also Mr. Courtney, the Engineer, for the excellent arrangements and the close attention they paid to the conduct of the trials.

The Council will no doubt thank Messrs. W. Dennis & Sons for the way in which they assisted, by supplying unstinted relays of labour, for keeping the machines clear, also carts and horses, weighing machines, bags, &c., and again et cetera.

A request had only to be made to the genial foreman for twenty more men and a cart or two, and they came—at once.

To crown all, it is reported that Messrs. Dennis & Sons are not charging the Society anything for what we might call a veritable superfluity of assistance.

WILLIAM COULMAN BROWN.

Appleby,
Lincolnshire

MISCELLANEOUS IMPLEMENTS EXHIBITED AT NORWICH, 1911.

THE entries of Miscellaneous Implements at the Norwich Show competing for the Society's Silver Medal were very satisfactory, numbering fifty-four as compared with fifty-eight at Liverpool in 1910.

These included improvements of unusual interest, and the Judges were able to award six Silver Medals to the following implements:—

No in Catalogue.	Exhibitor.	Nature of Award
590	BAMFORD & SONS, Uttoxeter.	Meal Sifter
1050	J & H. McLAREN, Leeds.	Steam Plough
1098	R. A. LISTER & Co., LTD., Dursley	Electric Lighting Installation
1612	AKTIEBOLAGET G. WELANDER & KELLNERS VERKSTADER, Sweden.	Milking Machine.
4119	F. M. DOSSOR, Doncaster.	Mangold Cleaner.
4642	A. I. MUNTZ, Hungerford.	Wire Strainer.

Taking these in the order in which they appear in the catalogue:—

Article No. 590.—*Meal Sifter, The "Colonial" No. 2.* Price 5*l*.—Exhibited by Messrs. Bamford & Sons, Uttoxeter. This is a very neat attachment, easily fixed to any of Messrs. Bamford's grinders. It consists of a horizontal cylinder, the bottom half of which is formed of wire gauze. Inside this cylinder revolves a solid cylinder concentric with it, round which is wound spirally a band of bristles. The meal from the grinder falls into one end of the cylinder, and is drawn along by the action of the spiral brush, and as the wire gauze is of three different meshes, with suitable hoppers underneath, the meal is divided into three grades. The bristles are mounted on a flexible band, so that they can be renewed at any time, and can be wound to any desired spiral.

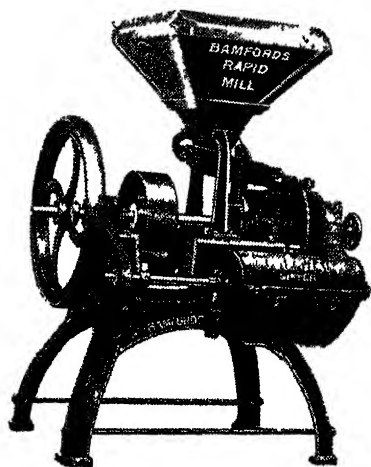


FIG. 1—Meal Sifter.

Article No. 1050.—*Steam Plough, Patent Baldock Pattern, 3-furrow, with digging breasts, McLaren's New Patent,* specially designed for ploughing by direct traction, self-lifting, and fitted with steerage and simple means for regulating the depth. Price 96*l*.—Exhibited by Messrs. J. & H. McLaren, Midland Engine Works, Leeds. The advent of the light tractor has caused a demand for a plough suitable for use in connection with it. The principal difficulty so far has been to raise the ploughs out of the ground, at the end of the furrow for turning, and to drop them into work again at the beginning of the return journey. Messrs. McLaren have got over this difficulty by

means of a species of crutch, which is carried on the side of the plough, and which, when allowed to drop on the ground, acts as a toggle, and lifts the plough out of the ground. The plough is lifted clear of the ground and is held in that position as long as may be required. As it is often desired to use more than one plough, it is necessary that the steering arrangement should be very perfect, in order that the furrows should be of a regular width. In Messrs. McLaren's plough the front wheel is steered by means of a lever, and when more than one plough is in use, each steers automatically the one behind it, the tiller of each plough being attached to the one preceding. There is a vertical adjustment, by which the plough can be set to work at any desired depth.

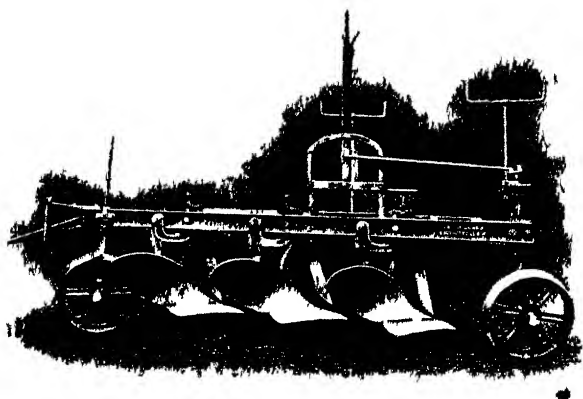


FIG 2.—New Patent Steam Plough

Article No. 1098.—*Electric Lighting Installation, Patent Automatic, "Bruston,"* consisting of "Lister" low speed petrol engine, dynamo, patent controller, switchboard, battery, girder foundations, tank connections, suitable for forty lights. Complete 130*l.*—Exhibited by Messrs. R. A. Lister & Co., Ltd., Dursley. This was a most interesting exhibit, and is a bold step in the direction of doing away with the cost and trouble of accumulators in a small electric light installation. All who have had to do with domestic electric lighting know the great cost and trouble entailed by the upkeep of these appliances. There is a set of accumulators, but very small ones, such as are used on motor cars. As practically all the current is delivered direct from the dynamo to the lamps, the efficiency of the plant is naturally high, the heavy accumulator loss being avoided. The battery

supplied with the plant should have a long life, as it is always kept fully charged up. If only two or three lights are being used, they are supplied from the batteries. When, however, more lamps are switched on, the extra current demanded by the lamps actuates a relay. The current then passes through the controller (which is an ordinary solenoid starting switch) and is delivered to the dynamo. The dynamo acts temporarily as a motor, and revolves the flywheel of the engine until firing commences. The dynamo then supplies current direct to the lamps, and also charges the battery to its full capacity. In the event of a small number of lamps, insufficient to start the plant, being kept on for a prolonged period,

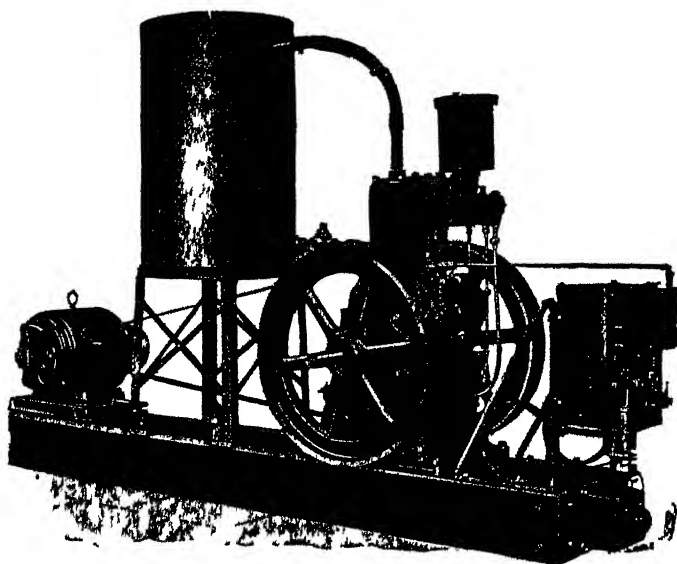


FIG. 8—Electric Lighting Installation.

undue depletion of the battery is guarded against by an arrangement whereby the relay is actuated when the battery voltage has reached a certain minimum. When all lamps are switched off, and the battery is fully charged, the relay is released and the plant automatically stops. The set consists of a slow speed petrol engine or gas engine of Messrs. Lister's standard design, the only addition being a simple exhaust valve lift, worked by means of a solenoid on the controller board, for easing the compression for starting and stopping, a belt-driven shunt-wound dynamo, controller, and an enamelled slate switchboard, on which is mounted the patent relay, usual measuring instruments, and safety circuit-breaker.

This switchboard forms the front of a wooden cabinet containing the battery. The plant is self-contained, and can be very easily fitted up and started. Messrs. Lister claim that with this set, and with petrol at the ordinary price, 1s. 2d. per gallon, or with town gas at 2s. 6d. per thousand feet, it is possible to generate current at 1½d. per unit. The standard pressure for these sets is 50 volts. It is difficult to imagine a more compact plant. It only occupies a floor space of about 9 ft. by 4 ft.

Article No. 1612.—*Milking Machine.* Price 15l.—Exhibited by Aktiebolaget G. Welander & Kellners Verkstad, Norrköping, Sweden.

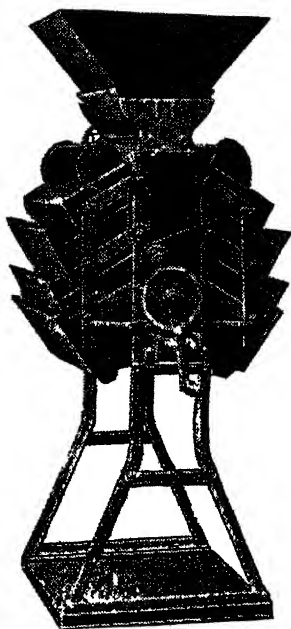


FIG 4.—Machine for Dressing Mangold Seed

Norrköping, Sweden. This is a very interesting machine, and differs from most others in that it endeavours to imitate the action of the human hand in milking, rather than that of the sucking calf, the action being merely mechanical, *i.e.*, no air pressure or suction is used, and no india-rubber tubing, the flow of milk from each teat being in sight throughout the operation. There are four small metal cups, one for each teat, attached to the end of four flexible arms, so that the cups can be readily adapted to any position of the teats and udder, and

as these arms are drawn upwards by springs, the machine adapts itself during milking to the altered shape of the udder caused by the withdrawal of milk. The machine is suspended by straps passing over the back and loins of the cow. The power required is very small, and was stated by the makers to

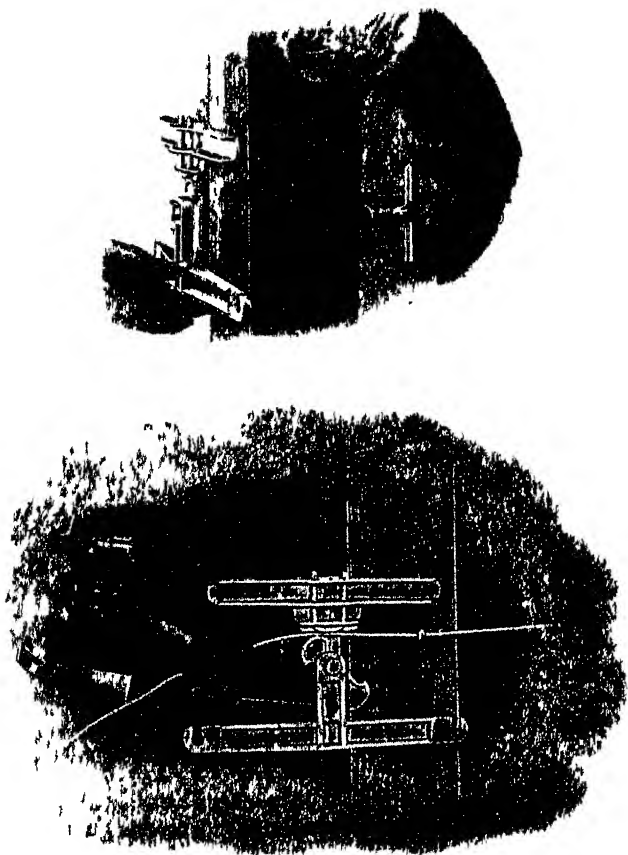


FIG 5.—Wire Strainer.

be one-fortieth h.p. per machine. As there are only four small cups, and no rubber tubes, in contact with the milk, the machine is very easy to keep clean, as it is only necessary to scald the four cups. At the Show this machine worked well, and it did not appear to be necessary to resort to hand-stripping

after working the machine. The reduction of the number of parts in contact with the milk is certainly a step in the right direction.

Article No. 4119.—*Machine for Dressing Mangold Seed.* Price 22*l.* 10*s.*—Exhibited by F. M. Dossor, St. Catherine's Works, Doncaster. This is a machine for the cleaning of mangold seed by the extraction therefrom of stalks, sticks, and other impurities. The seed is fed from a single hopper to the cleaning sections, which are arranged on both sides of the central frame. The separation is effected by running belts, which, acting in conjunction with covers and check-boards, allow the good seed to escape purified from the fronts of the machine, but retain and concentrate the impurities, which are delivered at the side of the machine by a cross belt arranged for their reception and discharge. The cleaning sections may be simultaneously adjusted to any required angle by the movement of a hand-wheel. The machine discharges all outputs direct into bags, and the makers claim that it has a capacity of 45 cwt. per hour. The power taken is very small, and the machine can easily be worked by a boy.

Article No. 4642.—*Wire Strainer.* Price 18*s.* 6*d.*—Exhibited by Albert Irving Muntz, Stype Grange, Hungerford. This is a very handy and simple instrument, and one well calculated to simplify the work of erecting strained wire fencing. It requires only one man to work it, *i.e.*, the same man can both strain the wire tight and attach it permanently while strained to the straining post, and it does not necessitate making any knots or bends in the wire. It can take up an unlimited amount of slack wire. It is applicable to all posts, or standards, up to 9 in. square, or 9 in. diameter, whether square or round; and whether the wire is to be stapled to the face of the post or passed through the centre of it. Its simplicity, rapidity of action, and universal application make it a most interesting appliance, and one likely to be of great use wherever wire fencing is used.

NEW IMPLEMENTS.

A walk through the machinery section of the Show showed that an increasing number of manufacturers are turning their attention to small engines for the use of agriculturists, and there seems to be a tendency to adopt the two-cycle motor, and to so design it as to be capable of using the cheap "crude" and "heavy" oils, and it seems probable that the development in the immediate future will be on these lines, more or less incorporating the Diesel system, which offers many attractions to the designer of motors for use in farmyards, &c. Amongst these advantages are the use of very safe and cheap fuel, the

absence of all ignition devices, and the power of self-starting at any time at a moment's notice. But there is much to be done in the way of simplification, &c., before a machine is produced with these advantages, and at the same time suitable for the trying conditions under which an agricultural motor has commonly to work; but with the able brains now at work on the subject, there is little doubt that we may confidently look forward to very interesting developments at the Shows of the R.A.S.E. in the next few years.

An interesting example is that shown as a New Implement by Messrs. Petters, Ltd., Nautilus Works, Yeovil. Exhibit No. 193. This engine has been designed with the idea of

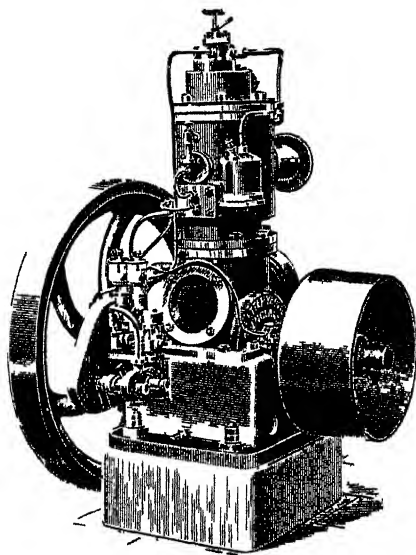


FIG. 6.—Petters Oil Engine

combining the merits of the high compression Diesel engine with those of the ordinary low compression oil engine. It is claimed that the engine works as well with crude oil as with refined petroleum. It is also claimed that the working cost is very low. In starting the engine, the vaporiser is heated by a lamp which is extinguished after the engine is started. At the end of the firing stroke the exhaust ports are uncovered, and the products of combustion expelled by pure air that has been previously compressed in the crank chamber. The fuel is pumped into the vaporiser under pressure, at the end of the compression stroke, the firing taking place automatically. The

speed is controlled by an inertia governor operating on the fuel pump.

An interesting detail of this engine is that the vaporiser is so mounted as to allow for radial expansion. It is claimed that 50 per cent. more power can be obtained than from an engine of the same size cylinder working on the Otto 4-stroke cycle. The cooling and lubricating arrangements have been carefully thought out.

Exhibit No. 446.—*Plough for Cutting Turf*, drawn by horse.—Exhibited by Messrs. Boulton & Paul, Ltd., Norwich. This is a machine for cutting turf, for laying down lawns, &c. It is a simple and ingenious appliance, consisting of a trough-like box, under which is a knife for cutting the under-side of the turf, and at the sides, knives suitably placed for cutting the edges. Lifting wheels are provided for regulating the thickness of the turf cut. The makers claim that it is capable of cutting one acre in two hours.

Exhibit No. 494.—*Harvester and Binder*, manufactured by International Harvester Company of America, Chicago. McCormick, 6 ft. cut, left hand, fitted with engine for driving binder attachment.—Exhibited by The International Harvester Company of Great Britain, Ltd., 80 Finsbury Pavement, E.C. This is the well-known McCormick Harvester, to which is fitted a small petrol motor of 2 H.P. This motor is arranged to work the binding mechanism, and if necessary the cutting knife as well. It adds about 1 cwt. to the weight of the machine, but, of course, relieves the horses of the labour necessary to work these parts of the machine, and it is claimed by the makers to save one horse.

Exhibit No. 591.—*Tedder, the "Lion,"* new light pattern, back action.—Exhibited by Messrs. Bamford & Sons, Uttoxeter. This is a very neat and light hay tedder, in which the movement of the tines closely imitates the movements of a hand fork.

Exhibit No. 667.—*Motor Roller*.—Exhibited by Messrs. Barford & Perkins, Queen Street Iron Works, Peterborough. This is a new light pattern roller for agricultural purposes, driven by petrol motor. It is constructed somewhat on the lines of their well-known road and estate motor-driven rollers, but a detachable crossbar can be fitted, by means of which two additional roller cylinders may be drawn behind, thus increasing the roller width by four feet.

Exhibit No. 943.—*Manure Distributor, New Patent "Helix."*—Exhibited by Messrs. J. & R. Wallace, The Foundry, Castle Douglas, N.B. This is of the "long box" forced-feed type. The new feature consists in a series of open helices or worms placed transversely in the hopper or box, which screw

the material to be distributed through openings in the rear side of the hopper. It is claimed that there is nothing so effective, of the force-feed order, as a screw, while the screws or helices being open, that is having no centre piece, pasty material cannot lodge on or block the screws. The entire bottom of the hopper can be instantly dropped, and each helix withdrawn, making the cleaning process very easy.

Exhibit No. 955.—*Potato Spraying Machine, "Norwich" Pattern*, suitable for spraying small acreages.—Exhibited by The Four Oaks Undentable Syringe and Spraying Machine

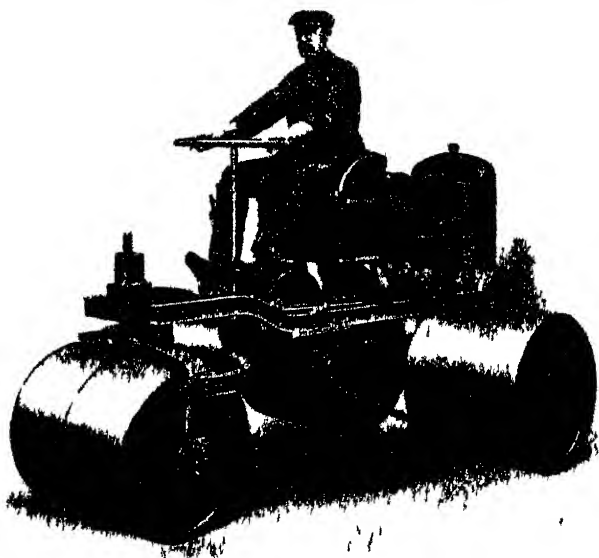
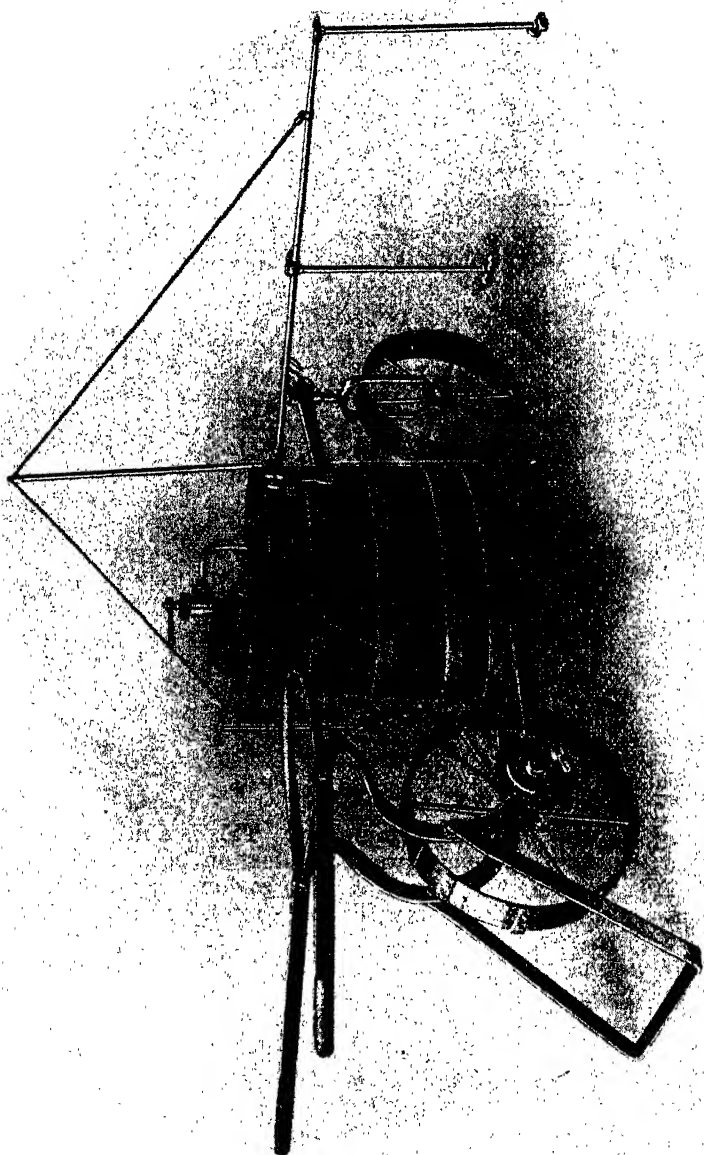


FIG. 7.—Motor Roller.

Company, Sutton Coldfield, Birmingham. This is a neat little machine for spraying four rows of potatoes on both sides at once. It has two tandem wheels, so as to go down one furrow. The sprayer consists of a horizontal pipe stretching across and over four rows of potatoes, to which are jointed eight arms with spraying nozzles, which can be set to deliver the spray at any desired angle. The pump is driven from the rear wheel by an ordinary bicycle chain. The pump is worked by a disc crank with variable throw, and a by-pass on the pump provides for the necessary agitation of the mixture.

Exhibit No. 966.—*Oil Engine, 75 B.H.P., 3-cylinder, 2-stroke cycle*, working on the Diesel principle, whereby crude petroleum refuse may be used as fuel without a vaporiser, and any form of ignition apparatus is dispensed with.—Exhibited



by Messrs. Willans & Robinson, Ltd., Victoria Works, Rugby. This is a most interesting exhibit, and is another instance of the tendency on the part of some of our best designers to develop the 2-stroke engine and the Diesel system. The special feature of the engine consists in the employment of a cylinder, which is really a sliding sleeve, inside a fixed cylinder, which may be looked upon as a guide; the sleeve is moved up and down by means of eccentrics formed on the crank webs. The rings of ports are cut in the sliding cylinder, those in the upper part communicating with the exhaust port, and those in the lower part connecting with a reservoir, in which air at a pressure of about 3 lb. per square inch is stored. These latter open slightly later than the former, so that after the pressure on the cylinder has fallen to that of the atmosphere, the air in the reservoir sweeps freely through the cylinder, effectually removing the spent charge, and as the sleeve ascends, first the exhaust ports, then the scavenge ports are closed, after which compression takes place. By the use of the sleeve very ample port areas for the exhaust gases and scavenge air are obtained, and as the stroke of the sleeve is half that of the piston, the velocity of the rubbing surfaces is halved. The ample area of the scavenge and exhaust ports enables the engine to be run at a high speed. As in a standard 4-stroke Diesel engine, air is compressed to 450 to 500 lb. per square inch, at which pressure the temperature is high enough to ignite the oil without initial heating of the cylinder, and the commencement and rate of injection is so regulated that the pressure does not rise appreciably beyond the compression pressure. There are so many interesting points connected with this engine that doubtless its performance will be closely watched by all interested in oil engine design.

Exhibit No. 1057.—*Seed Dressing Machine*, for dressing seed with liquid dressing; for hand power.—Exhibited by Messrs. E. R. & F. Turner, Ltd., St. Peter's and Grey Friars Works, Ipswich. This machine consists of four mixing chambers fitted with screw conveyors, and has the necessary taps, &c., to regulate the supply of the liquid. The arrangement is such that practically every seed is brought into contact with the liquid dressing. The machine is capable of doing one bushel per minute, and is easily driven by hand.

Exhibits Nos. 1294, 1295, 1296.—Exhibited by the Daimler Co., Coventry.

This was the first time for the Daimler to show at the "Royal," and the exhibit was an imposing and interesting one. There were two petrol tractors of different design, and one of the well-known Renard Road Trains. One tractor, No. 1294, was fitted with a 6-cylinder Daimler engine, 4.88 bore by 5.11

stroke, 57 B.H.P. by R.A.C. rating; and the other 4-cylinder, 25 H.P., R.A.C. rating. In both these the well-known sleeve valve engine is used. In the larger tractor the engine is carried behind, while in the smaller it is placed in front. In both cases there is a cone clutch, but in the larger size metal to metal is used, while in the smaller the cone is leather covered. The Renard Train, No. 1296 (Daimler Renard System), is, of course, a most beautiful and interesting piece of engineering construction. As it is so well known, and a full description would take many pages, it will not be attempted here.

Exhibit No. 1449.—*Direct Traction Plough for 6 furrows.*—Exhibited by Messrs. James and Frederick Howard, Britannia Iron Works, Bedford. This is a 6-furrow plough, strongly constructed to withstand the strains incident to heavy ploughing work by tractors. It consists of six separate and independent ploughs, each with its swivelling supporting

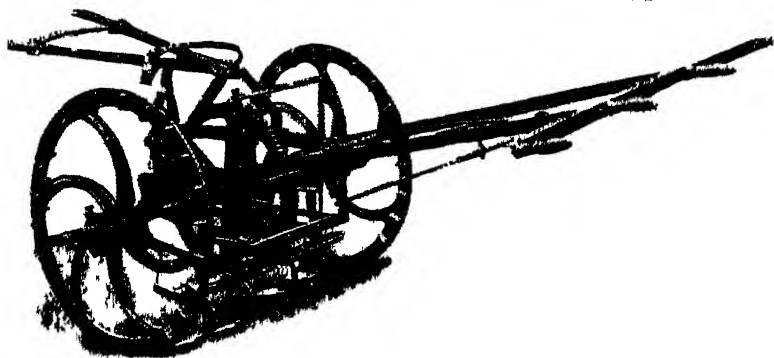


FIG 9 Horse Hoe and Turnip Thinner

wheel, and each hinged separately to a strong foretruck constructed of steel girders, on castor wheels in front, with platform, each plough being provided with a lever, by which it can be put in, or out, of work independently of the others by the ploughman standing on the platform. Each has a screw adjustment by means of which the shares may be given more pitch, or downward inclination, when the points become worn. The castor wheel which supports each plough, and by which the working depth is regulated, also ensures a uniformity of depth of ploughing on uneven land. Each share cuts a width of 14 in., and the depths of working can be adjusted from 6 in. to 12 in.

Exhibit No. 2117.—*Horse Hoe and Turnip Thinner, Patent, Corn and Root.*—Exhibited by Messrs. R. A. Lister & Co., Ltd., Dursley, Gloucestershire. This is a machine fitted with

four hoes, which have a motion imitating as nearly as possible the action of a hoe in a labourer's hands. Tines of different sizes and shapes can be fitted for all sorts of work. It is claimed that the action brings the weeds out to the surface of the land, and does not bury them, so that they do not grow again. The shafts are pivoted over the centre of the machine, which facilitates the work of the man behind in steering the machine along the rows.

Exhibit No. 4277.—*Egg Case, Marshall's "Duplex,"* with locked filler, for 30 doz. eggs.—Exhibited by Mr. James Marshall, 12 Regent Quay, Aberdeen. Mr. Marshall had a very interesting exhibit of egg boxes, with most ingeniously constructed sections for holding the eggs, which are made of leather boards, interlocked in such a way that the sections cannot come to pieces.

OTHER IMPLEMENTS.

As usual, Messrs. Thomas Robinson & Son, Ltd., of Rochdale, had an imposing exhibit of wood-working and flour-milling machinery. Amongst the latter was a very interesting Patent Diagonal Roller Mill, the chief novelty of which consists in an improved design for the double roller feed. The gate or feed plate is carried on a shaft, as usual, and is suspended from short levers at each end, one being fixed on the shaft and the other being adjustable by means of collar and set screw. Both horizontal and vertical screw adjustments are provided for the feed plate. The feed is automatic, or fixed at will. A short lever is carried outside the frame, by means of which the plate is instantly raised about $1\frac{1}{2}$ in. for the release of moth larvæ or any other foreign substances. A further improvement has been made in the grooving of the feed rolls, which ensures a perfect stream of stock passing to the grinding rolls. Another very interesting machine was the Patent Double Crank Plansifter. By the introduction of two cranks the strain and stress on the frame work and the vibration are greatly reduced, and the life of the machine should be considerably prolonged. These machines are worked in conjunction with the well-known Cyclo-Pneumatic Break Separator and Aspirator.

The wood-working exhibit included machines for performing almost every operation required, and included sawing machines of various sorts, mortising machines, general wood workers, saw benches, and planing machines. One of the latter was particularly noticeable, as it combines the advantages of a hand and power feed machine. The table for the hand power is placed above the cutter block, while that for power feed is below it, and each is fitted with the necessary adjustments and guides for planing various widths, thicknesses, &c.

Messrs. Boulton & Paul, Ltd., Norwich, had a large and varied exhibit. At Stand No. 261 they erected an excellent example of their portable buildings. The exterior was Elizabethan, rough cast, with the interior tastefully treated to represent old plaster and half timber work. The building was suitable for a workmen's club, village hall, or billiard room. It would equally serve as a cottage bungalow for seaside or river, estate office, or entrance lodge.

A very handsome conservatory was also shown, together with a large display of heating appliances. There were two open air shelters, especially designed for use in medical treatment, but they could be used also as summer houses. An assortment of garden seats and vases completed a very attractive exhibit.

It may be mentioned here, that the well appointed little hospital ward, in which there were a number of interesting medical exhibits, was built and lent to the Norfolk and Norwich Hospital by Messrs. Boulton & Paul.

The exhibit of the Associated Portland Cement Manufacturers (1900) Ltd., Stand No. 264, attracted a great deal of attention, as the various articles shown were such as are in general use on estates and farms, and were exhibited to show what could be done with Portland cement.

Reinforced concrete for the last few years has been used for almost every conceivable purpose, and as its strength and durability is beyond question, there is no reason why its use should not become general on all estates.

The stand was surrounded on two sides by wire fencing fixed to concrete posts, the cost of which, including posts, spaced 12 ft. apart, straining posts, struts, plates for the feet of struts, five lines of 7-ply wire with the requisite strainers, and the labour for erection, was said to be only 1s. 2d. per yard run. It was stated that the cost of these posts was very little more than that of wooden ones, while they are practically everlasting. The wires pass through holes in the centre of the posts, so that there are no staples to come adrift, and the renewing of wires is a simple matter. A third side of the stand was enclosed by concrete post and rail fencing, which is eminently suited for cattle pens, stud paddocks, &c., on account of its strength, durability, and cleanliness. The fourth side was enclosed by concrete blocks which had been made in the Winget machine.

On the stand were shown concrete fence posts costing 1s. 9d. each, gate posts 3s. 10d. each, a rectangular cattle trough of 110 gallons capacity, which cost for all materials and labour only 11s. 2d. A circular trough to hold 120 gallons, which cost 9s., a small hog trough, a chicken trough, tiles for floors,

walls, and roofing (both plain and coloured), all made of concrete, were also shown.

The moulds in which these were made, and spare reinforcements (steel rods and wire netting), were also exhibited, so that every one could see exactly how they were made.

A small hand-power machine manufactured by the First Cottbus Machine Company was at work making concrete drain pipes, which appeared to be strong and perfectly true, showing no sign of warping.

Two hand-power machines made by the Winget Concrete Company were being worked making blocks, hollow and solid, suitable for building.

In conclusion, I wish to express the thanks of my co-Judge, Mr. J. B. Ellis, and myself, to the Stewards of Implements, Mr. F. S. W. Cornwallis and the Hon. J. E. Cross, for the great help they gave us, and for their admirable organisation of the Trials, &c.; and also to Mr. F. S. Courtney, the Society's Engineer, for his ready courtesy in helping us in every possible way, and giving us the advantage of his great experience.

R. M. GREAVES.

Wern,
Ponimadoc.

MILK AND BUTTER TESTS AT THE NORWICH SHOW, 1911.

I.—MILK-YIELD TESTS.

THE prizes given by the Royal Agricultural Society in the various breed classes for these competitions were increased at Norwich by the inclusion of Holsteins and Dairy Cattle; thus making thirteen classes in the place of eleven at Liverpool in 1910.

The number of entries was far in excess of previous years, 149 cows being catalogued. Of this number, however, 30 were absent, and 7 of those present, through mistakes on the part of the herdsman, were disqualified, so that 112 only were tested.

This large number is mainly due to the good entries in the Shorthorn, Red Poll, and Dairy Classes, and it is satisfactory to be able to point out that with the increased numbers the proportion of cows whose milk did not reach the average of 3 per cent. fat in the two milkings was much reduced.

TABLE I.—MILK-YIELD CLASSES AT NORWICH, 1911.

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calving	No. of days in milk	Total yield in 34 hours	Fat per cent. age	Points		Awards			
								Lactation	Total				
											Fat per cent. by 4	Milk	
Class 103													
834	O. R. W. Adeane.	<i>Shorthorns</i> Babraham Eva Bates	Sept. 9, 1905	May 30, 1911	29	63	12	58-75	14-40	N11	68-15	R.H.C.	
835	O. R. W. Adeane.	Moss Rose 2nd.	Feb. 20, 1900	June 18, 1911	10	42	14	53-55	14-20	N11	57-07	—	
842	J. T. Hobbs.	Nelly Lee 24th.	Oct. 12, 1903	June 2, 1911	26	46	12	50-0	14-20	N11	60-75	H.C.	
843	J. T. Hobbs.	Miss Concorn 6th	Nov. 10, 1904	May 31, 1911	26	50	4	57-0	12-40	1-00	63-05	3rd Prize.	
844	R. W. Hobbs & Sons	Hawthorn 7th.	Dec. 7, 1905	Mar. 31, 1911	89	53	0	57-0	12-28	4-90	69-18	H.C.	
845	R. W. Hobbs & Sons	Snowdrop 52nd.	June 1, 1905	May 28, 1911	36	61	8	55-65	14-60	N11	68-10	H.C.	
947	R. E. Nelson.	Bridge Countess	Feb. 3, 1905	June 9, 1911	19	51	4	56-0	14-40	N11	66-08	H.C.	
948	H. H. Owtman	Newland Poppy	Jan. 4, 1901	June 6, 1911	22	61	14	55-00	14-00	N11	65-87	—	
949	H. H. Owtman	Newland Poppy 3rd.	Feb. 13, 1905	June 18, 1911	10	44	0	50-2	44-00	12-08	N11	66-08	H.C.
950	H. H. Owtman	Newland Rose 2nd	Dec. 3, 1904	June 22, 1911	6	49	0	45-5	49-00	17-80	N11	64-05	H.C.
951	J. Ellis Potter	Asley Gertrude	Oct. 22, 1905	May 25, 1911	34	62	6	52-92	12-37	11-88	N11	63-38	H.C.
952	J. Ellis Potter	Waterloo Molly	June 20, 1905	May 20, 1911	39	48	12	53-30	48-75	13-20	N11	63-38	H.C.
953	S. S. Rangell	President's Rose	Jan. 2, 1904	June 14, 1911	14	50	6	57-12	50-60	14-88	N11	61-50	H.C.
954	Lord Rothschild.	Cherry Blossom	Apr. 13, 1904	May 18, 1911	41	46	6	57-25	48-31	13-00	5-60	H.C.	
955	Lord Rothschild.	Runglet 9th.	June 12, 1904	Mar. 25, 1911	15	45	4	57-25	48-31	13-00	1-00	63-35	H.C.
956	Lord Rothschild.	Runglet 11th.	Sept. 20, 1904	Mar. 25, 1911	48	40	12	51-15	48-75	12-60	1-00	63-35	H.C.
957	S. Sanday	Blackington Princess 4th.	Sept. 20, 1904	May 18, 1911	48	40	12	51-15	48-75	12-60	1-00	63-35	H.C.
958	S. Sanday	Red Rose A	Aug. 13, 1905	Mar. 25, 1911	45	48	—	—	—	—	—	Disqualified.	
959	J. M. Strickland.	Brandsby's Princess	July 6, 1904	Mar. 25, 1911	95	49	—	—	—	—	—	H.C.	
960	Mrs. A. G. F. Thornton	Lady Dizzy	Dec. 20, 1906	Apr. 27, 1911	62	51	8	53-12	13-80	9-0	67-82	H.C.	
961	J. A. Williams	Badlad Singer	Dec. 20, 1904	Apr. 16, 1911	73	47	8	47-07	47-50	16-28	3-90	67-08	H.C.
962	G. B. Nelson.	Lady Haggie 1st	May 2, 1907	June 12, 1911	16	46	8	45-35	46-50	17-40	N11	63-60	H.C.
967	J. Ellis Potter	Rosebud 7th	Jan. 20, 1907	Apr. 23, 1911	61	38	0	55-55	58-00	14-60	2-10	54-70	—
970	Lord Rothschild.	Beaumont Princess	Jan. 3, 1907	June 7, 1911	21	57	6	55-35	57-37	15-80	N11	53-17	2nd Prize.
971	S. Sanday	Lady Thrush 3rd	May 20, 1907	Mar. 15, 1911	105	52	10	43-30	53-63	17-20	6-60	76-32	1st Prize.
973	Mrs. A. G. F. Thornton	Queen of Hearts 2nd	Jan. 8, 1908	May 16, 1911	43	33	6	53-37	15-88	3-0	49-55	—	
Class 111													
1003	J. Evans	Burton Cork 6th	Mar. 30, 1905	June 9, 1911	19	55	0	57-5	55-00	15-00	N11	70-00	3rd Prize.
1004	J. Evans	Burton Spotted 5th	Mar. 6, 1903	June 12, 1911	17	52	12	42-0	53-76	16-80	N11	69-55	R.H.C.
1005	J. Evans	Canwick Dairymaid 2nd	Feb. 2, 1906	Apr. 2, 1911	86	63	4	50-0	58-25	12-00	4-70	74-95	2nd Prize.
1010	C. B. Score.	Bracebridge No. 102	March, 1900	May 8, 1911	51	66	10	56-7	66-62	14-68	1-10	82-40	1st Prize.
Class 127													
1153	Viscount Chetwynd	Compton Lely	Feb. 5, 1904	June 5, 1911	50	0	3-87	50-00	15-48	N11	65-48	1st Prize.	
1156	J. H. Cheek	Wyndford Cherry	Jan., 1902	May 28, 1911	33	45	0	58-2	45-92	15-28	N11	60-10	2nd Prize.
1156	J. H. Cheek	Wyndford Fillpal	Sept. 4, 1907	Mar. 23, 1911	156	24	0	58-2	24-00	11-90	—	*Not sampled.	
1157	J. H. Cheek	Wyndford Spider	Sept. 4, 1906	Mar. 19, 1911	101	33	0	58-2	24-00	11-90	—	*Not sampled.	
1157	R. A. Clark	Maud	May 4, 1904	May 27, 1911	32	43	0	55-55	43-00	14-20	N11	57-20	3rd Prize.
1158	R. A. Clark	Dorothy Lass	Mar. 6, 1902	Mar. 8, 1911	112	38	4	55-55	33-25	14-60	7-20	55-05	R.H.C.
Class 133													
1167	Thomas Cundy	Red Rose	Dec. 12, 1904	Mar. 20, 1911	100	48	0	52-20	48-00	12-80	6-00	66-80	2nd Prize.
1169	W. & H. Whitely.	Daisy	Oct. 26, 1905	Mar. 20, 1911	48	42	0	52-20	48-00	12-80	6-00	66-80	2nd Prize.
1170	W. & H. Whitely.	Lovely	Sept. 24, 1905	Apr. 25, 1911	64	54	2	52-20	48-00	12-80	2-40	63-40	—
Class 138													
1172	W. H. Sale	Bilston Sunlight	May 20, 1904	Jan. 13, 1911	168	38	12	57-70	38-75	14-80	12-00	65-55	1st Prize.
1183	W. H. Sale	Lady Panza	Sept. 8, 1902	Apr. 6, 1911	83	43	10	53-90	43-62	15-60	4-30	63-52	2nd Prize.

TABLE I.—MILK-YIELD CLASSES AT NORWICH, 1911—continued.

No. in Catalogue	L. Hunter	Name of cow	Date of birth	Date of last calf	No. of days milk	Total yield in 24 hours	Points			Awards
							Fat per cent	Milk per lb. by 4	Lactation Total	
Class 155		Red Polls		1911						
1306	Capt. D. G. A. Stey	June	Feb. 20, 1907	May 4	55	1,140	43.75	16.20	61.45	H.C.
1307	J. B. Chevalier	Cassia 2nd	Apr. 10, 1903	May 16	47	47	4.02	47.25	3.80	66.83 H.C.
1308	Kenneth M. Clark	Sudbourne	Apr. 23, 1903	May 21	37	37	4.02	47.25	3.80	66.83 H.C.
1309	Kenneth M. Clark	Sudbourne Queen 1st	May 3, 1904	May 21	35	52	4.07	52.37	16.28	68.05 H.C.
1310	Kenneth M. Clark	Sudbourne Rose	Sept. 14, 1903	Jan. 14	68	39	2	59.23	15.28	68.05 H.C.
1311	Kenneth M. Clark	Sudbourne Sadie 1st	Apr. 18, 1906	Apr. 21	168	54	2	59.23	15.28	68.05 H.C.
1312	Kenneth M. Clark	Lunda 3rd	Apr. 20, 1908	Apr. 4	85	49	12	59.23	15.28	68.05 H.C.
1313	Corbet, Bt.	Waxlight 2nd	Feb. 26, 1902	Feb. 13	68	84	2	59.23	15.28	68.05 H.C.
1314	Corbet, Bt.	Judith 2nd	Apr. 16, 1905	Feb. 13	135	87	6	59.23	15.28	68.05 H.C.
1315	Lord Cranworth	Chedda	Oct. 25, 1902	May 16	40	40	6	59.23	15.28	68.05 H.C.
1316	Sir A. E. Fellowes	Claret	Jan. 28, 1901	Jan. 3	176	23	10	59.23	15.28	68.05 H.C.
1317	Sir A. E. Fellowes	Joyful	Dec. 30, 1901	Apr. 24	66	66	13	59.23	15.28	68.05 H.C.
1318	The Marchioness of	Retreat	May 28, 1905	Apr. 23	68	43	14	59.23	15.28	68.05 H.C.
1319	A. Carlisle Smith	Queen Mab	Aug. 23, 1903	Apr. 28	61	41	14	59.23	15.28	68.05 H.C.
1320	A. Carlisle Smith	Rendlesham Florence	Mar. 31, 1902	Apr. 16	122	21	12	59.23	15.28	68.05 H.C.
1321	Alfred J. Smith	Rendlesham Fay	July 22, 1904	June 8	20	54	4	59.23	15.28	68.05 H.C.
1322	R. Eaton White	Bertha	Oct. 8, 1905	Apr. 14	75	36	4	59.23	15.28	68.05 H.C.
1323	G. Holt Wilson	Charming Davy 6th	Mar. 25, 1903	Apr. 16	73	39	12	59.23	15.28	68.05 H.C.
1324	G. Holt Wilson	Freckles 4th	Oct. 25, 1903	May 10	49	53	6	59.23	15.28	68.05 H.C.
1325	J. B. Chevalier	Aspall Princess 2nd	Jan. 23, 1908	Nov. 21, 1910	219	26	6	59.23	15.28	68.05 H.C.
1326	Sir A. E. Fellowes	Athens	Apr. 18, 1908	Jan. 17	162	162	6	59.23	15.28	68.05 H.C.
1327	Lieut.-Col. Ferguson-	Gardrum Ruby	1903	June 7	21	47	0	59.23	15.28	68.05 H.C.
1328	W. & J. Kerr	Dewdrop 1st of Old Grainney	Jan. 1898	June 1	27	43	8	59.23	15.28	68.05 H.C.
1329	W. Nisbet	Dalriddle Belle 2nd	Sept. 27, 1901	June 1	69	54	0	59.23	15.28	68.05 H.C.
1330	W. Nisbet	Dalriddle Daisy Belle	Dec. 25, 1900	Mar. 1	100	85	6	59.23	15.28	68.05 H.C.
1331	W. Nisbet	Tibble 2nd of Dalriddle	Apr. 10, 1898	Mar. 1	119	85	6	59.23	15.28	68.05 H.C.
1332	C. H. Westropp	British Holstein	1905	Apr. 10	79	59	12	59.23	15.28	68.05 H.C.
1333	G. Berry	Melford Eva	June 12, 1907	Apr. 4	174	36	4	59.23	15.28	68.05 H.C.
1334	J. Branton	Bat	Aug. 12, 1904	Mar. 9	111	36	4	59.23	15.28	68.05 H.C.
1335	Earl Oadogean	Irish Lass	Apr. 8, 1905	Mar. 21	108	36	4	59.23	15.28	68.05 H.C.
1336	Mrs. Evelyn	Chizireh	Oct. 7, 1906	Mar. 21	108	36	4	59.23	15.28	68.05 H.C.
1337	Mrs. Evelyn	Comodora	Aug. 7, 1906	Feb. 12	108	36	4	59.23	15.28	68.05 H.C.
1338	Ladies R. & D. Hope	Record 3rd	Aug. 7, 1906	Mar. 27	131	35	14	59.23	15.28	68.05 H.C.
1339	A. Miller-Hallett	Staphanada	Apr. 11, 1906	May 23	40	39	4	59.23	15.28	68.05 H.C.
1340	A. Miller-Hallett	Goodness	July 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1341	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1342	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1343	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1344	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1345	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1346	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1347	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1348	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1349	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1350	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1351	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1352	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1353	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1354	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1355	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1356	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1357	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1358	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1359	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.
1360	A. Miller-Hallett	Goodness	Apr. 11, 1906	May 23	61	39	4	59.23	15.28	68.05 H.C.

TABLE I.—MILK-YIELD CLASSES AT NORWICH, 1911—continued.

No. in Catalogue	Exhibitor	Name of cow	Date of birth	Date of last calf	No. of days in milk	Total yield in milk Lb. oz.	Fat per cent. age	Points			Awards
								Milk	Fat per cent. by 4	Lactation	
Jerseys—continued.											
Class 183				1911							
1566	G. Murray Smith	Jewel	May 4, 1906	Apr. 25	64	43	4.63	42.50	18.48	2.40	63.38 H.C.
1569	G. Murray Smith	Laurel of Hauteville	June 13, 1903	May 8	31	38	4.77	38.97	19.08	N11	57.08 H.C.
1570	J. H. Smith-Barry	Ceprice	July 28, 1905	Jan. 8	171	46	4.65	46.97	18.00	12.00	77.47 2nd Prize.
1571	J. H. Smith-Barry	Post Obit	Mar. 23, 1904	Feb. 25	140	51	4.50	51.00	18.00	8.80	79.00 H.C.
1572	J. H. Smith-Barry	Promise	Apr. 20, 1906	Mar. 8	123	47	4.35	47.00	15.40	1.10	63.03 H.C.
1575	R. Bruce Ward	Mrs. Viola	Aug. 1, 1900	June 8	51	44	4.45	44.12	17.80	N11	64.15 H.C.
1576	Sir Julius Wernher	May Queen	Sept. 5, 1906	June 3	25	43	4.57	43.87	20.28	7.80	56.10 H.C.
1581	Earl Cadogan, K.G.	Gaintlet 9th	Mar. 16, 1908	Mar. 2	118	30	4.45	30.50	17.80	3.60	55.45 H.C.
1601	Capt. Hill	Successor	Jan. 14, 1909	Apr. 13	76	29	5.12	29.37	20.48	3.60	55.45 H.C.
Guernseys											
Class 189											
1604	Mrs. R. C. Bainbridge	Elfordleugh Judy	Mar. 7, 1903	Apr. 23	66	48	3.85	48.62	15.80	2.30	67.02 2nd Prize.
1609	Sir Everard Hambro	Hayes Olive	June 8, 1903	Apr. 15	74	43	4.02	43.75	16.08	3.40	62.23 3rd Prize.
1661	Sir H. F. Leonard, Bt.	Wickham Fancy 2nd	Nov. 3, 1906	May 18	41	46	4.07	46.00	15.30	1.10	62.38 H.C.
1665	H. F. Plumppre	Muriel 12th	Apr. 18, 1901	Apr. 14	75	38	4.05	38.50	16.50	3.50	62.50 H.C.
1668	H. F. Plumppre	Violet des Jaonnets	Apr. 27, 1901	Feb. 16	130	46	4.07	46.50	16.50	9.00	71.45 1st Prize.
1683	J. J. Smal	Godolphin Ruth	Mar. 13, 1907	May 2	57	29	4.90	29.37	19.00	1.70	50.07 H.C.
Kerries											
Class 194											
1695	Lady Greenall	Fenella	May 8, 1909	Apr. 25	64	45	3.23	45.87	12.88	2.40	61.75 1st Prize.
1698	Lady Greenall	Lackham Lanky	June 16, 1907	Apr. 18	70	42	3.70	43.72	16.40	N11	59.62 2nd Prize.
1699	R. Tait Robertson	Laurel Lough Duv	July 10, 1904	Apr. 27	60	42	3.95	42.00	15.80	2.20	45.00 H.C.
1700	R. Tait Robertson	Laurel Lough Duv	July 10, 1904	Apr. 19	70	25	4.0	25.25	11.60	3.00	39.85 Fat Below Standard.
1701	E. Royds, M.P.	Ma Macha Ophian Kale	Apr. 18, 1906	May 13	48	41	4.60	41.37	14.80	7.00	59.87 3rd Prize.
1703	T. Waite	Ma Macha Ophian Kale	Apr. 18, 1906	May 13	48	41	4.60	41.37	14.80	7.00	59.87 3rd Prize.
1704	T. Waite	Duv Mole	Apr. 25, 1907	Apr. 8	81	25	3.67	25.92	10.68	4.10	40.40 Fat Below Standard.
1707	R. Tait Robertson	Ma Macha Ophian Kale	Apr. 25, 1907	Apr. 26	63	24	3.57	24.87	14.28	2.30	41.45 H.C.
1708	R. Tait Robertson	Duv Gor-	Apr. 28, 1908	Apr. 20	69	31	3.55	31.00	14.20	2.90	48.10 H.C.
Devons											
Class 199											
1730	Hon. Mrs. C. Portman	La Mancha Merry Widow	April 1907	Apr. 5	84	22	2.17	22.12	10.68	4.40	37.20 Fat Below Standard.
1732	R. Tait Robertson	Gort Prince	Apr. 1907	May 19	40	44	2.92	44.00	11.68	N11	55.08 Fat Below Standard.
1736	B. de Bertodano	Cowbridge Dainty Maid	Mar. 12, 1908	Apr. 25	64	32	3.20	32.50	12.80	2.40	45.70 1st Prize.
Cows of any age, breed or cross											
Class 202											
1756	J. Evans	Burton Amy	March, 1902	Apr. 28	61	61	3.45	61.50	13.80	2.10	77.40 3rd Prize.
1757	J. Evans	Burton Amy	March, 1902	Apr. 28	68	71	3.27	71.50	13.08	2.30	86.68 2nd Prize.
1758	J. Evans	Burton Miller 2nd	March, 1905	Apr. 26	63	38	3.25	38.87	13.00	N11	57.37 H.C.
1759	R. W. Hobbs & Sons	Burton Young Cherry	Nov. 18, 1899	May 30	25	61	3.55	61.37	14.20	7.80	69.97 H.C.
1760	R. Long	Bertha 11th	Dec. 22, 1906	Mar. 25	64	61	4.12	61.37	16.30	12.00	69.97 H.C.
1761	R. Long	Rumber-tone Flower	1902	May 5	176	46	4.65	46.50	18.00	2.30	64.97 1st Prize.
1762	R. Long	None So Pretty	1902	Jan. 8	10	46	4.65	46.50	18.00	2.30	64.97 H.C.
1763	S. B. Nelson	Dorothy	Unknown	June 18	30	46	4.65	46.50	18.00	2.30	64.97 H.C.
1764	Orwich Corporation	Dorothy	Jan. 1905	Apr. 20	30	46	4.65	46.50	18.00	2.30	64.97 H.C.
1765	Whitney V. Poll	Primrose	Unknown	May 10	30	46	4.65	46.50	18.00	2.30	64.97 H.C.
1766	S. S. Rang	Primrose	Unknown	June 12	19	50	3.4	50.35	12.80	N11	73.25 H.C.
1767	L. and Rang	Primrose	Unknown	June 12	19	50	3.4	50.35	12.80	N11	73.25 H.C.
1768	W. S. Stevenson	Theale 3rd	1906	May 14	46	52	12.27	52.87	9.08	5.0	62.45 Fat Below Standard.
1769	W. S. Stevenson	Theale 11th	1904	May 18	41	63	12.27	63.27	11.75	10.05	71.43 Fat Below Standard.
1773	F. Long	Dollie 2nd	Mar. 2, 1908	Feb. 1	147	36	4	36.25	14.60	10.70	61.55 H.C.

The trials were judged on the same scale of points as in the past two years. They are as follows:—

	Cows 5 years and over	Cows and heifers under 5 years
Shorthorn, Lincolnshire Red Shorthorn, } Holstein, South Devon and Dairy } Cattle }	60	55
Red Poll, Longhorn, Devon, Ayrshire, } Jersey and Guernsey }	55	50
Kerry and Dexter	45	40

The Table on pp. 268-70 gives the full details of the trials and the prize winners in their respective classes.

Table II. gives the number of cows which have competed in the milk-yield trials at the Shows of the Society since their institution.

TABLE II.

Breed	Derby, 1906	Lincoln, 1907	Newcastle, 1908	Gloucester, 1909	Liverpool, 1910	Norwich, 1911
Shorthorn .	10	12	8	13	14	28
Lincolnshire Red do. .	4	8	4	7	7	8
Devon .	—	—	—	4	4	4
South Devon	2	2	3	4	5	3
Longhorn .	1	2	4	2	3	2
Red Poll .	6	6	5	4	6	19
Ayrshire .	1	4	3	3	4	5
Holstein .	—	—	—	—	—	1
Jersey .	18	9	17	22	17	20
Guernsey .	8	6	5	9	4	6
Kerry .	5	5	8	13	4	8
Dexter .	8	10	7	12	5	3
Crossbred .	—	1	1	—	—	5
Total .	63	65	65	93	73	112

Table III. gives the averages of all the cattle tested, but it must be pointed out that the averages of the cattle entered in the Dairy classes have been added to the averages of the cattle entered in their respective breed classes, where the breed was stated in the catalogue.

TABLE III.—*Averages of all the Cattle entered in the Milk-yield Classes.*

No. of cows com- peting	Breed	Days in milk	Milk		Fat per cent.	Points			
						Milk	Fat	Lacta- tion	Total
			Lb.	oz.					
28	Shorthorn .	46	47	4 $\frac{3}{4}$	3.60	47.26	14.40	.60	62.26
8	Lincoln. Red do.	48	60	0 $\frac{1}{2}$	3.26	60.03	13.04	.80	73.87
4	Devon .	50	42	15 $\frac{1}{2}$	3.72	42.96	14.88	1.00	58.84
3	South Devon .	70	51	8	3.40	51.50	13.60	3.00	68.10
2	Longhorn .	124	41	3	3.80	41.18	15.20	8.40	64.78
19	Red Poll .	77	42	14 $\frac{6}{10}$	3.51	42.89	11.04	3.70	60.63
5	Ayrshire .	67	46	12 $\frac{4}{5}$	3.44	46.77	13.76	2.70	63.23
1	Holstein .	79	59	12	2.85	59.75	11.40	3.90	75.05
20	Jersey .	93	41	2 $\frac{1}{10}$	4.77	41.13	19.08	5.30	65.51
6	Guernsey .	73	42	2	4.17	42.12	16.68	3.30	62.10
8	Kerry .	58	33	0 $\frac{1}{2}$	3.45	33.01	13.80	1.80	48.61
3	Dexter .	62	32	14	2.93	32.87	11.72	2.20	46.79
5	Crossbred .	72	59	2 $\frac{4}{5}$	3.38	59.14	13.52	3.20	75.86

¹ The averages have been given, but it will be seen that on the average figures no prizes could have been awarded.

Thirteen animals were disqualified, the average percentage of fat in the two milkings not coming up to the standard of 3 per cent. The number is made up as follows:—

1 Shorthorn	out of 28 sampled
2 Lincolnshire Red Shorthorns	" 8 "
4 Red Polls	" 19 "
1 Holstein	" 1 "
2 Kerries	" 8 "
2 Dexters	" 3 "
1 Crossbred	" 5 "

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II.—BUTTER TESTS (CLASS 203, A & B).

The number of cattle entered for these trials—74—constitutes a record for the Royal Agricultural Society's Show. Of this number 63 animals were milked out, but 2 were subsequently disqualified, leaving 61 to go through the test.

The trials were carried out under similar conditions and the same scale of points as in previous years, the heavy weight class consisting of 46 cows of various breeds, the light weight class numbering 15, all of which were Jerseys.

The Tables on pp. 273-5 give the full result of the trials, with the prizes, commended cards and certificates of merit awarded.

The results, on the whole, were not as good as in previous years. This will be seen by comparing the average number of points gained at this and at the previous Shows of the Society (Table VII.) and the butter ratio figures (Table VIII.).

TABLE IV.—RESULTS OF BUTTER TESTS AT NORWICH, 1911—continued.

CLASS 203 A.—COWS IN-MILK OF ANY AGE, BREED OR CROSS, EXCEEDING 900 LB. LIVE WEIGHT.

No. in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No. of days in milk	Milk made in 24 hours	Butter yield	Ratio, viz., lb. milk to lb. butter	Colour and quality of butter		No. of points for	No. of points for period of lactation	Total No. of points	Awards	CHURNING TABLE			
																	Time	Temperature, ° F.	Yield	Buttermilk
											Colour	Quality					Finished	Unfinished	Yield	Buttermilk
1170	W & H. Whitley	Lovely	S. Devon	...	Sept. 24, '05	1911	64	34	2	1.91	Fair	Very poor	8.50	2.40	10.90	...	2 23	2 43	15	08
1183	W. H. Sale	Lady Panza	Longhorn	...	Sept. 8, '02	April 6	63	33	1	1.74	Fair	Fair	23.50	4.30	27.80	...	2 45	3 30	45	08
1503	Reynolds & Clark	Shibourne Queen	Red Poll	...	Sept. 8, '04	May 24	35	52	0	1.74	Fair	Fair	23.25	4.11	27.35	...	2 45	3 35	47	08
1321	A. J. Smith	Reddisham boy	Red Poll	...	Mar. 31, '02	Feb. 18	132	21	12	2.1	Fair	Poor	3.25	9.20	12.45	...	2 50	3 35	39	08
1323	A. J. Smith	Reddisham boy	Red Poll	...	July 22, '01	June 8	20	54	1	1.04	Poor	Poor	16.25	11.11	16.25	...	3 0	3 35	35	08
1543	J. Branton	Blossom	Jersey	...	Aug. 12, '04	March 9	111	42	2	1.3	Poor	Good	32.50	7.00	40.50	...	3 15	4 7	52	08
1548	Earl Cadogan	Irish Lass	Jersey	...	Apr. 9, '05	March 24	96	32	8	1.94	Poor	Good	32.75	7.40	40.15	...	3 15	4 7	52	08
1550	M. Evelyn	Concordia	Jersey	...	Jan. 14, '05	March 31	89	40	8	2.31	Fair	Good	32.75	7.40	40.15	...	3 15	4 7	52	08
1555	Lord Ladlow	Harwood Bluebell	Jersey	...	Mar. 15, '08	Jan. 27	152	24	12	1.1	Fair	Good	17.50	11.20	28.70	...	3 51	5 50	45	08
1556	Lord Rothschild	Kenta	Jersey	...	Mar. 15, '08	May 5	54	55	14	1.41	Fair	Good	20.94	11.40	32.34	...	2 31	3 45	50	08
1566	Lord Rothschild	Trinidade 2nd	Jersey	...	Dec. 13, '05	March 11	109	50	4	1.54	Good	Good	31.50	6.60	38.10	...	2 43	3 48	68	08
1572	J. H. Smith-Barry	Promises	Jersey	...	Apr. 23, '05	Feb. 25	123	47	0	1.13	Good	Very good	29.25	8.30	37.55	...	12 13	1 6	53	08
1586	H. F. Plumptre	Violet des Jauns	Guernsey	...	Apr. 27, '01	Feb. 18	130	46	8	1.14	Excellent	Fair	31.25	9.00	40.25	...	11 36	12 6	29	07
1753	J. Evans	Baron Amy	Lincoln Red	...	Mar. 1902	April 28	61	61	8	1.1	Good	Very good	33.75	7.10	40.85	...	11 19	12 30	71	08
1757	J. Evans	Baron Miler 2nd	Lincoln Red	...	Mar. 1902	April 28	63	61	8	1.1	Good	Very good	31.00	7.20	38.20	...	11 19	12 30	71	08
1760	F. Long	Humberstone	Crossbred	...	Dec. 25, '06	March 25	53	33	14	1.54	Fair	Fair	15.25	5.50	20.75	...	10 55	11 45	50	08
1761	F. Long	Flower	Crossbred	...	Unknown	May 5	54	61	0	2.04	Fair	Good	32.50	11.40	43.90	...	10 38	11 7	29	04
1762	G. B. Nelson	None So Pretty	Crossbred	...	Unknown	Jan. 3	176	63	10	1.94	Fair	Good	25.75	12.00	37.75	...	10 7	10 55	48	58
1764	W. W. Poll	Dorothy	Shorthorn	...	Unknown	June 18	10	46	6	2.02	Good	Very good	32.75	7.20	39.95	...	10 41	11 29	39	58
1767	W. Stevenson	Primrose	Crossbred	...	Unknown	May 20	39	65	14	1.74	Fair	Fair	28.50	7.40	35.90	...	9 53	10 23	30	08
1768	W. R. Stevenson	Treatie 3rd	Lincoln Red	...	1905	May 14	45	62	14	1.54	Fair	Fair	28.50	7.40	35.90	...	9 53	10 23	30	08
1769	W. R. Stevenson	Treatie 11th	Lincoln Red	...	1905	May 14	45	62	14	1.54	Fair	Fair	28.50	7.40	35.90	...	9 53	10 23	30	08
1770	F. B. Wilkinson	Shuttle	Shorthorn	...	1907	Mar. 6	57	50	8	1.33	Excellent	Fair	19.75	17.0	36.75	...	9 44	10 38	54	08
1773	F. Long	Douie 2nd	Shorthorn	...	Mar. 2, '08	Feb. 1	147	36	4	1.24	Poor	Poor	13.25	10.70	23.95	...	9 44	10 29	48	08

1. The "Butter Ratio" represents the number of lb. of milk required to make 1 lb. of butter. Ten lb. of milk are reckoned as equal to an imperial gallon.

TABLE IV.—RESULTS OF BUTTER TESTS AT NORWICH, 1911—continued.

CLASS 203 B—COWS IN MILK, OF ANY AGE, BREED, OR CROSS NOT EXCEEDING 900 LB LIVE WEIGHT

No in Catalogue	Exhibitor	Name of cow	Breed	Live weight	Date of birth	Date of last calf	No of days in milk	Milk yield in 24 hours	Butter yield	Colour and quality of butter		No of pounds for butter	No of pounds for litigation	Total No of pounds	Awards	CHURNING TABLE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
										Butter yield	Ratio, viz. lb milk to 1 lb butter					Colour	Quality	No of pounds for butter	No of pounds for litigation	Total No of pounds	Awards	Began	Finished (minutes)	Purity	Green and cream	Buttermilk																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

2 The "Butter Ratio" represents the number of lb of milk required to make 1 lb of butter. Ten lb of milk are reckoned as equal to an imperial gallon.

The larger number of entries and the hot weather may partly account for these reductions, but in my opinion the feeding of the cattle in many cases was the cause; the difficulty of churning and the number of buttermilks which required to be churned again pointing to this conclusion.

Table V. gives the number of cattle which have competed at the Shows of the Society during the past six years in these classes.

TABLE V.

Breed	Derby, 1906	Lincoln, 1907	Newcastle, 1908	Gloucester, 1909	Liverpool, 1910	Norwich, 1911
Shorthorn .	2	4	3	6	9	17
Lincoln. Red Shorthorn.	2	8	3	5	5	7
Devon .	—	—	—	3	3	1
South Devon	2	2	3	4	5	3
Longhorn .	—	1	—	—	2	1
Red Poll .	—	1	—	3	3	3
Ayrshire .	—	—	1	1	2	—
Jersey .	17	14	15	18	19	22
Guernsey .	—	4	1	3	—	1
Kerry .	—	—	—	2	—	—
Crossbred .	—	1	—	—	1	3
Total.	23	35	26	45	40	61

Table VI. gives the averages of the cattle tested, from which it will be seen that in all cases, where more than one animal was competing, the amount of milk taken to make one pound of butter is considerably larger than usual.

TABLE VI.—*Averages of Cattle Tested.*

No. of cows com- peting	Breed	Live weight	Days in milk	Milk	Butter	Ratio	Points
		Lb.		Lb. oz.	Lb. oz.		
17	Shorthorn .	1402	52	48 1½	1 7	33·16	24·20
7	Lincoln. Red do.	1442	42	60 ½	1 12½	33·59	28·92
4	Devon .	1295	78	38 ½	1 1½	31·87	21·34
3	South Devon .	1488	70	51 8	0 15½	52·87	18·58
1	Longhorn .	1470	83	43 10	1 7½	29·70	27·80
3	Red Poll .	1262	62	42 12½	0 11½	48·04	16·45
22	Jersey .	865	109	38 14½	1 12½	21·63	35·69
1	Guernsey .	1078	130	46 8	1 15½	23·80	40·25
3	Crossbred .	1260	89	62 15½	1 11½	36·96	32·15

The next table shows how the figures have varied at the different competitions.

TABLE VII.--Average points won by the Cattle at Derby, Lincoln, Newcastle, Gloucester, Liverpool, and Norwich, with the number of cattle competing at each of those Shows.

Breed	Derby		Lincoln		Newcastle		Gloucester		Liverpool		Norwich	
	No. of Cows	Points	No. of Cows	Points	No. of Cows	Points	No. of Cows	Points	No. of Cows	Points	No. of Cows	Points
Shorthorn .	2	37.77	4	31.70	3	16.76	6	31.36	9	24.78	17	24.20
Lincolnshire Red do.	2	38.45	8	31.06	3	36.85	5	33.89	5	37.90	7	28.92
Devon .	—	—	—	—	—	—	3	19.30	3	29.87	4	21.34
South Devon	2	41.40	2	37.75	3	29.38	4	42.52	5	36.30	3	18.58
Longhorn	—	—	1	33.35	—	—	—	—	2	32.40	1	27.80
Red Poll .	—	—	1	31.65	—	—	3	27.56	3	19.86	3	16.45
Ayrshire .	—	—	—	—	1	39.45	1	33.75	2	35.02	—	—
Jersey .	17	37.95	14	36.61	15	35.61	18	32.68	19	31.17	22	35.69
Guernsey	2	29.25	1	33.45	1	38.25	3	34.26	—	—	1	40.25
Kerry	—	—	—	—	—	—	2	20.85	—	—	—	—

Table VIII. is inserted to show the butter ratios at the last six Shows of the Society, and the average butter ratio of all the cattle tested.

TABLE VIII.—Average Butter Ratio figures or number of pounds of Milk taken to make 1 lb. of Butter under their respective breeds and headings at Derby, Lincoln, Newcastle, Gloucester, Liverpool, and Norwich, and the average number of cattle tested at the six Shows, with the average butter ratio figures of all cows tested.

Breed	Derby	Lincoln	Newcastle	Gloucester	Liverpool	Norwich	The Six Shows	
							No. of Cows	Butter ratio
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.		
Shorthorn .	20.53	30.94	24.94	33.43	34.35	33.46	41	32.15
Lincoln Red do. .	28.80	29.24	22.30	28.23	27.23	33.59	30	29.02
Devon .	—	—	—	35.72	26.47	34.87	10	32.60
South Devon .	26.32	25.79	29.10	24.65	29.48	52.87	19	31.37
Longhorn .	—	21.74	—	—	22.29	29.70	4	24.00
Red Poll .	—	24.54	—	30.59	36.00	48.04	10	36.84
Ayrshire .	—	—	28.69	28.91	29.54	—	4	29.17
Jersey .	19.47	19.38	19.69	20.50	21.96	21.63	105	20.57
Guernsey .	20.28	22.35	19.89	21.57	—	23.80	11	21.66
Kerry .	—	—	—	32.35	—	—	2	32.35

NOTE.—In these calculations 10 lb. of milk have been taken as representing 1 gallon.

The number of cattle both in the milk-yield and butter-test trials rendered the work exceptionally heavy, and I should wish to put on record the great assistance I had from my two Assistant Stewards, Messrs. A. Gibson and Lionel Dashwood.

III. EXPERIMENTS IN THE DAIRY

1. *Churnability of Cream.*

The morning of the second day of the Show—June 27—being fixed for this experiment, all the milks from the Short-horn, Red Poll, and Jersey breeds brought to the dairy were put aside. They were separated at 9 a.m., each lot of milk being heated above 90° F.,¹ the separator being run at a uniform speed throughout, and the cream from each lot being kept separate.

The creams were thoroughly stirred, and from each lot three samples were taken of 8 lb. weight.

One lot of 8 lb. of cream of each breed was churned in the afternoon of June 27, the second lots being reserved for churning on the following morning, when they would in the ordinary course have ripened sufficiently to churn without loss if treated properly; while the third lots were handed to Mr. Cooper to be churned in his experimental churns, which were again erected in the Dairy. A full description of these is given in the last number of the Society's Journal, Vol. 71, pp. 117-20.

The analyses of both cream and buttermilk were taken, the following table giving the full result of the experiments:—

BREED—SHORTHORN.

	Weight of cream		Weight of butter		Percentage of fat in cream	Percentage of fat in buttermilk	Duration of churning minutes	Temperature		
	lb	oz	lb	oz				Daily °F	Cream in churn °F	Butter-milk °F
Sweet cream	8	0	5	1½	52	18½	30	63	54	58
Ripened cream	8	0	5	7½	52	34	30	61	54	58

BREED—RED POLL.

Sweet cream	8	0	4	13½	48	15.7	25	63	51	58
			5	4						
Ripened cream	8	0	4	11½	48	9.0	37	61	51	58
			5	2						

BREED—JERSEY.

Sweet cream	8	0	5	5	51½	4.4	34	63	54	58
Ripened cream	8	0	5	7½	51½	.85	29	61	54	58

NOTE.—The percentage of fat in the Red Poll milk being less than in the other breeds, the figures in the second line give the weight of butter which should have been obtained had there been 52 per cent. of fat in the cream, or, in other words, corrected to 52 per cent. of fat in the cream

¹ The actual temperatures measured by Mr. Cooper, were Shorthorn 94°, Jersey 95°, Red Poll 99° F. The best results are obtained when milk is separated between 90° and 100°. In large quantities of milk it is difficult to separate the whole lot exactly to a degree throughout.

Taking the weights of butter only, the ripened Shorthorn and Jersey creams give the best results, the ripened Red Poll and sweet Shorthorn being the worst.

The best criterion, however, is the amount of fat left in the buttermilk, for the quantity of water left in the butter may vary, however carefully the work is done.

No water was added to the churns until after the samples had been taken for analysis, so that the difference between the fat found in the buttermilk and the total fat in the cream gives the correct amount of fat taken out as butter.

Judging from this, which is the most accurate method of judging, the ripened cream gave much better results than the sweet cream.

Comparing the results of all the churnings the Red Poll and Shorthorn sweet creams were the worst, the ripened Shorthorn was better than the ripened Red Poll, while the Jersey creams, both sweet and ripened, churned well.

The experiment demonstrated perhaps more thoroughly than previous experiments have done, (1) that creams which contain the larger proportion of uniform fat globules churn better than creams where the range of the sizes of fat globules is wider; (2) that ripened creams generally churn better than sweet creams, and that creams which have stood 24 hours, even when mixed with creams separated only 12 hours before churning, are sufficiently ripened to yield the maximum quantity of butter.

2. The making of Cheeses suitable for Small Holdings.

Both on large and small farms there comes a time when the supply of milk exceeds the demand, and it is then that the question arises how best to use up such surplus.

The leaflet, No. 231, entitled "Cheese Making for Small Holders," issued by the Board of Agriculture and Fisheries, gives an answer to this question, and to demonstrate its practicability, the Council of the Royal Agricultural Society sanctioned the making of such cheeses in the Society's Working Dairy at Norwich. The manufacture of soft cheeses—known as Cream and Gervais—has formed part of the Dairy programme for the past few years; consequently the cheeses selected for the experiment were those described in the leaflet "Pressed Cheeses Nos. 1 and 2," the first requiring 5 gallons of morning milk, the second $2\frac{1}{2}$ gallons of evening and $2\frac{1}{2}$ gallons of the following morning's milk. Shorthorn milk was used throughout.

The process of manufacture (fully described in the leaflet) was rigidly adhered to, and it is satisfactory to report that the cheeses all turned out well, this being the more encouraging

because an open dairy in a showground, with the impossibility of regulating the temperature of the room where the cheeses were kept at night, are conditions not too favourable to the manufacture of pressed cheeses.

The time taken in making each cheese, excluding the pressing and turning, was about $2\frac{1}{2}$ hours. The cheeses, when made, were kindly kept and looked after until ripe by Mr. John Benson. They realised 9d. per pound, the weights averaging about $5\frac{1}{2}$ lb. each.

The experiment is useful, as it shows that the making of these cheeses is not very difficult, and that it is a very profitable way of using surplus milk on a farm, the cost of the utensils and the labour in making the cheeses, being comparatively small.

ERNEST MATHEWS.

Little Shardeloes,
Amersham.

AGRICULTURAL EDUCATION EXHIBITION, NORWICH, 1911.

THE Education Exhibition was again housed adjoining the Forestry section and was in the charge of Sir J. B. Bowen-Jones, Bt., whose long and devoted labours in the cause of "Practice with Science" every member of the Society is glad to see acknowledged. The section was not so representative of the colleges as in former years owing probably to the distance of the show from most of the educational centres, but in quality the exhibition was fully as interesting and instructive as usual. More space was allotted to the Nature Study exhibit organised by the County Councils of East Anglia, so the area occupied by the exhibition was as large as before.

The Society's Show is the only occasion when the work of the Agricultural colleges throughout the kingdom can be viewed as a corporate whole, and even when only a few of them are actually represented one realises what a large and increasing debt the country is under to them in their work for agriculture. The great strides which have been made in recent years in the advance of knowledge of the use of manures and feeding stuffs, in soil science, in the investigation and treatment of plant diseases and pests, the improvement by hybridising of our farm crops, to name a few examples, are very striking, and the average agriculturist is a little prone to take all these benefits for granted and does not realise the difficulties, financial and otherwise, which the colleges have had to contend

against compared to more favoured institutions in America and our colonies. Such an exhibition as this of the R.A.S.E. must help the farming public to understand and appreciate the value of a "College Training."

The Royal Agricultural Society of England had, as in former years, two bays, one of which was devoted to a collection of the Society's pamphlets and other publications, and the other illustrated the work of the Woburn Experimental Station. This being fully explained in the Report of the station it suffices to notice some of the experiments illustrated at the exhibition. The experiments on the effect of increasing amounts of magnesia were shown by wheat plants grown in pots and by the roots and grain of the wheat grown in the 1909 experiments.

The striking effect of lime and chalk on the acid Woburn soil was well shown by plots planted with barley, showing also how the use of lime checks the obnoxious weed spurrey, so common on acid soils.

Pots containing a Fen soil in one case untreated, the other heated to 100°C. and sown with barley, showed the characteristic rankness of growth, which is noticed where plants grow on the site of an old heap of couch ashes. This question of soil sterilisation is one which calls for extended investigation.

Other exhibits showed by diagrams the results of the continuous growth of wheat and barley, and specimens giving the effect on root growth of differences in the mechanical condition of the soil and of the effects of magnesia, lithium and zinc. A good series of turves from grass land, variously manured, showed the excellent herbage produced by phosphatic manures with potash, compared with the coarser, growth produced by dung.

Cambridge University School of Agriculture.—The show was situated within the University's sphere of activity in agriculture, and a most interesting exhibit was arranged. The main feature was that of the hybridisation on Mendelian lines both of plants and animals. A series of the original parents and early crosses of wheat, ending in the production of the new hybrids gave some idea of the enormous amount of labour which this work entails, the importance of which cannot be over-estimated. A striking example of Mendel's law was afforded by rabbits. Skins of the original parents, Himalayan (white, black points), and Dutch (yellow and white) were shown, and a skin of one of the offspring of this cross, which showed complete reversion to the original form, being to all appearance an ordinary wild rabbit. Then followed the skins of the litter produced from the first cross grey rabbits, showing the characteristic points of each first parent recurring again separately.

Other examples of Mendelian science were shown in the work which has been done on the cotton and sugar cane plants by Cambridge men abroad, by means of specimens and photographs of the methods employed in selection, &c. Specimens and maps were shown illustrating soil surveys in Norfolk and other counties, and showing how the various farm crops followed in their distribution the different soils most favourable to them.

An interesting exhibit was one illustrating the food of wild birds—rooks, starlings, and larks. The contents of the birds crops were separated out and shown in diagrams by means of parallel columns; seeds, grain, and beneficial insects on the one side, against weeds and injurious insects on the credit side. The rook's record was a black one, the food consisting wholly of grains. The starling was shown to be almost wholly beneficial, while the lark consumed about an equal quantity of weed seeds to put against the sown grain he ate. These results only referred to the spring, and the rook may be able to redeem his character during the rest of the year, but it is doubtful. There was not a single wireworm to his credit in this account.

Other exhibits included plans of the Norfolk Agricultural Station, where the tenant farmers of Norfolk are working out their own problems in agricultural science.

The Agricultural Education Association had a large display of literature. Looking at the numbers of College prospectuses one realised how the country has been covered during the last twenty years with centres for teaching and research in agriculture.

Harper-Adams Agricultural College, Newport, Salop.—This College, from the opposite side of England, had an interesting exhibit. The black scab or wart disease of potatoes was illustrated by a number of specimens and diagrams. It is evident that it will not be the fault of the College if this new terror of the potato grower gets a firmer hold on the West Midlands. Specimens, unfortunately somewhat damaged in transit, illustrated the growth of the chicken in the egg from the first to the twenty-first day. A most striking little experiment was one showing the loss of water by evaporation. It was shown that ground kept thoroughly hoed on the surface retained almost as much water as ground mulched with dung, and both preserved four or five times as much water as ground simply left rough. This experiment sent at least one visitor home determined to ply the horse and hand hoes with redoubled vigour, whether there were weeds to kill or not.

Other exhibits included a series of specimens of parasitic diseases, and photographs and diagrams showing various departments of the college work.

The National Fruit and Cider Institute had a large display of ciders and perries showing the effects of different ferments, and of the qualities obtained from separate types of cider apples and pears. Cultures of cider and perry yeasts and others illustrating cider sickness showed the good work the Institute is doing in raising the manufacture of cider from rule of thumb methods to the level of the wine and brewing industries, by the employment of scientific methods.

Specimens of the various stocks used in raising fruit trees and methods of propagation were shown. The specimens of grafted trees cut through in section showing the union of stock and scion, and other sections through pruned trees, showing the bad effects of leaving a "snag" in pruning, were most instructive.

There was a large display of insect and fungoid pests and modes of treatment. Bottling of fruits, a useful side line for the fruit grower, and indeed for any owner of a garden, was illustrated by types of suitable bottles.

The Royal Meteorological Society had a fine array of the instruments and other appliances by which weather records are taken. The forecasts during the Show week were anxiously examined by many. Specimens and photographs showed the effect of lightning, damage by hailstorms, &c.

As in former years there was a climatological station outside where Mr. Marriott gave demonstrations each day and also sent up pilot balloons to show the method adopted for ascertaining temperatures at high altitudes and drift of atmospheric currents.

Nature Study and Rural Education, organised by the Councils of the Eastern Counties, occupied a large portion of the building. Among such a number of exhibits it is impossible to notice many in a brief review. Wood models of various farming implements, &c., including a Great Eastern Railway express and station (perhaps a rather extended interpretation this, of Nature Study), showed much patient labour both in teacher and pupil, and a large number of drawings, specimens, and notebooks showing results of work done made up a comprehensive exhibition, showed real efforts to interest the children of rural districts in their own surroundings, and give them a bent towards country pursuits.

FORESTRY EXHIBITION AT NORWICH, 1911.

THE Forestry Exhibitions organised by the Royal Agricultural Society in conjunction with the Royal English Arboricultural Society are maintaining their high standard of excellence. They are steadily growing in importance and increasing in interest.

The Norwich Exhibition was the fifth one held under the auspices of the Royal Agricultural Society. As regards size it did not perhaps compare favourably with some former exhibitions, but in point of educational value, and as a reflection of the Forestry features and capabilities of the district embraced by the Royal Show, it may be said to have been a great success.

COMPETITIVE CLASSES.

The Exhibition was divided into two main portions, namely (1) COMPETITIVE CLASSES FOR SPECIAL MEDALS and (2) CLASSES FOR EXHIBITION ONLY. The total entries numbered 103, distributed over 18 classes.

The competitive classes for British-grown timbers were four in number, and of these, Classes 1 and 3, for timbers of broad-leaved trees, were decidedly the best.

In Class 1, for specimens of OAK, ASH, ELM and BEECH timber, the awards were as follows:—

1st prize, Silver Medal.—The Earl of Leicester.

2nd prize, Bronze Medal.—The Earl of Carnarvon.

The Specimens shown in Lord Leicester's first prize lot were exceedingly fine, evenly-grown, well-hearted planks, and those exhibited by Lord Carnarvon also consisted of timber of considerable merit.

In Class 2, for Specimens of LARCH, SPRUCE and SCOTS PINE timber, there were four entries, and the awards were:—

1st prize, Silver Medal.—The Earl of Carnarvon.

2nd prize, Bronze Medal.—The Earl of Leicester.

The Larch plank in the first prize lot was of particularly good quality, and both prize lots exhibited the features of well-grown coniferous timbers.

In Class 3, for Specimens of HARDWOOD TIMBER OTHER THAN THOSE IN CLASS 1, the awards were:—

1st prize, Silver Medal.—Mr. C. Coltman Rogers, Stanage Park, Radnorshire.

2nd prize, Bronze Medal.—The Earl of Leicester.

Reserve, V.H.C.—The Earl of Albemarle.

The stands of timber in this competition were remarkable both for the variety of species shown and for the relatively high quality and the dimensions of the planks. Probably in no

European country but our own could so great a variety of species of timber trees be grown to such perfection.

Class 4 was for Specimens of ANY HOME-GROWN CONIFEROUS TIMBER OTHER THAN THOSE IN CLASS 2, and there were four entries. The awards were :—

1st prize, Silver Medal.—The Earl of Leicester.

2nd prize, Bronze Medal.—The Earl of Carnarvon.

Lord Leicester's first prize stand contained Common Silver Fir, Sitka Spruce, Grandis Silver Fir, Cedar of Lebanon, and *Cryptomeria Japonica*—representative species from Europe, Asia, and America.

Lord Carnarvon's second was for a single plank of exceedingly well-grown Corsican Pine, a tree that has hitherto been less extensively grown in this country than it deserves.

Very interesting competitions were those in Classes 5, 6, and 7, for Gates made of various home-grown timbers and suitable for farm and estate use. There were eleven entries and the awards were as follows :—

CLASS 5.—OAK FIELD GATES.

Silver Medal—The Earl of Leicester.

Bronze Medal—The Lord Barnard.

Reserve (H.C.)—Mr. J. H. Gurney, Keswick Hall, Norwich.

CLASS 6.—FIELD GATES OF HOME TIMBER OTHER THAN OAK ALONE.

Silver Medal—The Earl of Carnarvon.

Bronze Medal—The Lord Barnard.

V.H.C.—Messrs. R. & R. Neaverson.

Com.—The Earl of Leicester.

The first prize gate in this class was a very excellent one made of chestnut and larch. The second prize gate, which was made of oak and larch, was also a very serviceable and nicely finished article.

CLASS 7.—ANY OTHER GATE FOR FARM AND ESTATE USE.

Silver Medal—The Earl of Leicester.

„ „ —The Lord Barnard.

Amongst the entries in this class there were two gates of totally different construction, which the Judges considered were equally deserving of the premier award. One was a very nice entrance gate of Spanish chestnut shown by Lord Leicester, and the other an exceedingly neat and well-finished hand gate or hunting wicket sent by Lord Barnard. The matter was finally adjusted by the award of silver medals to each of the competitors.

The competition in Class 8 was for TREE GUARDS, presumably for park trees or for exceptionally valuable hedgerow trees, for plantation trees should not require such protection. The first prize in this class was awarded to Mr. C. Coltman Rogers for an exceedingly neat guard fence constructed of light wooden rails and wire netting; the second to Messrs. R. & R. Neaverson; the H.C. ticket going to Mr. E. R. Pratt for a simple but useful guard constructed of outside slabs of spruce.

Class 9 was for SECTIONS OF FENCING CONSTRUCTED MAINLY OF WOOD, and there were four competitors. In this case the competition was open to tradesmen as well as to estate employees. Messrs. Armstrong, Addison & Co., of Sunderland, were awarded the silver medal for section lengths of variously designed wooden fences, both untreated and treated with antiseptics such as creosote and also by a process similar to burnetising, the advantage claimed for the latter method being that the timber can be painted over any time after treatment if desired, whereas creosoted timber cannot be painted.

Bronze medals were awarded to Messrs. English Bros., Wisbech, for various types of useful post and rail and triangular pale fences, and to The Stanley Underwood Company for chestnut pale fencing suitable for hunting districts. One special type of fencing constructed by the latter company is provided with "bolt" holes at intervals to permit of foxes getting through.

In Classes 10 and 11 for specimens showing the effects on the timber of growing the trees in dense and open stands, and for specimens showing the quality of timber grown in different soils and situations, there was only one entry, namely, that by Mr. Morgan P. Price, Tibberton Court, Gloucester, of seven specimens of Scots pine timber grown on different soils. For this the Judges awarded a bronze medal.

NON-COMPETITIVE CLASSES.

In the non-competitive classes the chief exhibitors were the Earl of Leicester, Cambridge University School of Forestry, Lord Middleton, Earl Cadogan, and Mr. E. R. Pratt. Interesting exhibits also came from the Cooper Laboratory for Economic Research, the Right Hon. Sir Ailwyn E. Fellowes, Mr. E. J. Wythes, Sir Hugh Beevor, the Dowager Countess of Leicester, the Norfolk Naturalists' Society, and Messrs. T. H. Prosser & Sons, Holloway Road, London.

From the Cambridge School of Forestry there came a very extensive exhibit. Included in it were a large collection of planks and sections of stems illustrative of native and exotic trees capable of being grown in this country, and also sections

and planks of imported timbers with which the home grown timbers have at present to compete. From the same place there also came useful series of material showing the utilisation of such native timbers as Ash, Elm, Beech, Alder, &c. Very interesting also was the railway sleeper of creosoted beech. After being several years in use this sleeper was found to be in an excellent state of preservation. Creosoted beech is largely used in France for railway sleepers. Could not our own railway companies be persuaded to try something in the way of utilising beech and similar native grown timbers in like manner?

Included in the Cambridge collection were also sets of specimens illustrative of forest botany, photographs of trees, and various other exhibits. For this very educative and extensive collection from Cambridge the Judges recommended the award of the gold medal.

The silver medal was awarded to Mr. E. R. Pratt for the whole of his exhibits. Mr. Pratt showed, along with Messrs. Prosser & Sons of London, a complete set of material illustrating the whole process of manufacture of superior cricket bats from *Salix Alba cœrulea* and also a less perfect kind made from *Salix fragilis*. The superiority of the *cœrulea* bats was well brought out.

Messrs. Prosser & Sons also had on exhibition superior ash and other timber showing the manufacture of hockey sticks and lawn tennis bats. Mr. Pratt's exhibit further included screens made of black oak, and sections of ash timber grown on clay and on peat; also a section of a thorn hedge showing the beneficial effects of the removal of elder plants and other objectionable weeds when the hedge was renovated by "plashing."

On Mr. Pratt's stand there was also exhibited a useful set of micro-photographs prepared by Messrs. Flatters & Garnett, showing the botanical features of the bat and crack willows.

The Cooper Laboratory for Economic Research had a very interesting stand on which were shown collections of material illustrative of the damage done by various insects to fruit and forest trees. This exhibit was awarded the bronze medal.

Sir Hugh Beevor sent specimens showing damage done by voles to young larch trees, and also photographs of British Columbian trees.

Lord Middleton sent a model of a useful creosoting tank, along with specimens of timber creosoted.

Messrs. Geo. Black & Sons, Berwick, exhibited a beautifully finished model of creosoting plant by the pressure method.

The Earl of Leicester had a stand of creosoted timber which attracted very considerable attention. Very interesting data concerning the amount of creosote absorbed by the various species accompanied the sets of creosoted material.

It should be noted that the amount taken up by timber appears to depend mainly on:—

- (1) The species.
- (2) The age of the timber and extent to which visible heartwood has developed.
- (3) The structure and texture of the timber, *e.g.* whether the wood consists mainly of thick walled or thin walled elements.
- (4) The amount of water present in the timber.
- (5) The exact composition of the creosote oil and the method of its application to the timber.

Some species absorb creosote more readily than others. Young, rapidly-grown, coniferous timber with slight heartwood development will take up far more than matured timber with well developed heartwood. Timber grown in open stands will absorb far more creosote than the close even-grained material taken from close forest.

The practical question is, how much creosote is really required to effect the object in view? The answer would appear to depend largely on the extent to which creosote acts as a germicide and the extent to which it acts as a water-proofing material. Space does not permit of this question being discussed in detail, but it may be noted that it is quite possible to make the process too costly and that more creosote may easily be injected into the timber than is absolutely necessary.

The following extract from a table of figures relating to the above, prepared for the Earl of Leicester by Mr. Donald Munro, may be of interest:

Extract from table showing the quantity of creosote absorbed by different kinds of home-grown air-dried timber under 90 lb. pressure for 3 hours, each piece of timber being equal to $\frac{1}{2}$ cubic foot. Price of creosote, 4½d. per gallon; sp. gr. 1.060.

Name of timber	Weight before being creosoted		Weight after creosoting		Weight absorbed		Weight absorbed per cubic foot		Cost of creosote per cubic foot of timber	
	Lb.	oz.	Lb.	oz.	Lb.	oz.	Lb.	oz.	s.	d.
Oak	16	0	16	2	0	2	0	8	0	0.21
Spanish chestnut	10	8	10	13	0	5	1	4	0	0.56
Beech	12	0	17	8	5	8	22	0	0	9.34
Ash	12	0	17	6	5	6	21	8	0	9.12
Sycamore	10	12	17	0	6	4	25	0	0	10.61
Quercus Ilex	16	4	18	10	2	6	9	8	0	1.16
Birch	13	12	19	8	5	12	23	0	0	9.76
Larch	10	1	11	0	0	15	3	12	0	1.59
Scots pine	10	10	14	4	3	10	14	8	0	6.15
Corsican pine	8	12	17	12	9	0	36	0	1	3.28
Spruce	10	5	16	8	6	3	24	12	0	10.5
Silver fir	9	2	16	12	7	10	30	8	1	0.94

Interesting photographs were also sent from Holkham of the shelter woods (chiefly Corsican pine) formed on the sand dunes by the Earls of Leicester.

Interesting collections of Bat Willows and other plants were sent by Messrs. Daniels Bros., of Norwich, and Mr. Ernest J. Wythes, from Copped Hall, Epping. Mr. Wythes, whose exhibit was very highly commended by the Judges, also had on his stand "quarterlefts" prepared for bats of *Salix caerulea* and of *S. fragilis*, along with specimens of these willows contrasting the appearance of the bark of the one species with that of the other.

Space does not permit of detailed accounts being given of many other interesting exhibits such as those of Earl Cadogan, Messrs. Richardson & Sons of Stamford, and the Norwich and Norfolk Naturalists' Society.

Having the fact in view that the districts from which the exhibits were drawn—chiefly the East Anglian counties—is a comparatively restricted one, it may safely be claimed that the Forestry Exhibition at Norwich was altogether most successful.

What appears lacking in these annual exhibitions (if a critical note may be sounded) is an additional number of competitive classes to bring out more fully certain features in the utilisation of home-grown timbers, and to show, if possible, new uses to which many less commonly used timbers might well be put—new uses for beech timber, for instance. Probably in future shows some of the points suggested may be taken up.

In conclusion I may be permitted to say that praise and thanks are due to all who worked so heartily for the success of the exhibition—to the local Forestry Committee, and the local secretary, Mr. J. C. Blofeld. Also to the stewards, Messrs. George Marshall and C. Coltman Rogers, who both were assiduous in their attentions throughout and who made most excellent arrangements for the Judges and for the staging and setting out of the exhibits.

J. F. ANNAND.

Armstrong College,
Newcastle-upon-Tyne.

PLANTATIONS AND HOME NURSERIES COMPETITION, 1911.

OUT of a total of fifty entries in the above Competition, twenty-two were plantations, twenty-one home nurseries, and seven estates. This number is twice as large as in either of the two previous years. A great deal of interest was manifested by estate owners, agents, and foresters, and the Local Committee had evidently worked hard to obtain the maximum number of competitors. More entries came from Norfolk than from the other two eligible counties, there being thirty-three entries from it, as compared with thirteen from Suffolk and four from Cambridgeshire. There were entries in every class, and only in two cases was it felt that a second prize could not suitably be awarded.

The majority of the classes are similar to those of previous years, the only considerable alteration being the appearance in the entry forms of a new section for estates as a whole. The Committee is to be congratulated on, striking out on a new line, which appears to have been immediately successful, as a keen competition resulted. It is, however, worth consideration whether in future years it would not be advisable to include less than appears on the schedules under the Estates Class. At present the section is open for woodland properties "not less than 1,000 acres in area, the Judges to take into account the production of timber, ornamental planting, planting for sporting purposes, and improvement of residential amenities, and proper management of hedgerow timber." To give proper attention to all these points entails much labour on the part of the Judges. As it happened, it was not difficult in the recent competition for the Judges to decide between the merits of the different estates on the matters mentioned, but as this might not always be the case, an alteration is suggested. In future it may be better to confine the attention of the Judges to the condition of the woods and plantations alone.

The full list of the Awards will be found in the Appendix, pp. cxxv. and cxxvi.

For purposes of comparison we shall discuss the competition classes in the order in which they appear in the Official List.

CLASS I.—"Plantation mainly of hardwoods 5 to 30 years old, not less than 6 acres in extent, restricted to landowners with more than 300 acres of woodland."

The hardwood plantations were not quite satisfactory. The old system of growing broad-leaved trees among conifers—the latter being intended to act as "nurses"—is still very largely practised; indeed, all of those entered were of this mixed composition. The hardwoods might have grown well had it

not been that in most cases they were crushed out by the more forward growth of the conifers when young. The first prize was given to Colonel Petre, as his plantation was much more regular than Lord Cadogan's, and because the proportion of hardwoods to conifers was greater. The trees in the Westwick wood showed promise of better growth, the planting had been well done and cheaply carried out, both as regards soil cultivation and expenditure on seedlings. Still, as suggested above, none of the competitors can be congratulated on their hardwood plantations.

CLASS II.—“Plantation mainly of hardwoods 5 to 30 years old, not less than 3 acres in extent, restricted to landowners with less than 300 acres of woodland.”

The first prize was given to Sir Hugh Beavor, Hargham, for an interesting wood, consisting of various hardwoods (beech, oak, ash, sycamore, and Spanish chestnut) in mixture with larch. As the last named species has taken the lead, vigorous thinning will be required if the hardwoods are to be saved, as we think they should be. This wood was superior to the others in the same class as having been more economically established and more regularly planted upon a definite scheme, full details of which were furnished. The land had been twice cultivated with a steam plough, at a cost of 20s. per acre, and the trees planted 4 ft. apart.

Second place was taken by Mr. W. A. Macfarlane-Grieve for a mixed hardwood plantation in the form of a belt, which could only have value for shelter, game preservation, and ornament. The trees were, however, perfectly healthy, presented a good appearance, and showed vigorous growth, although now in need of thinning.

CLASS III.—“Plantation mainly of conifers 5 to 30 years old, for landowners with more than 300 acres of woodland.”

The best competition took place in this class, there being eight entries, most of which had points which commended themselves. Colonel Petre's plantation was considered better than the others because of its composition, splendid growth, admirable choice of species according to the soil and situation, the small expenditure on formation, and the low cost in maintenance. It consists of fairly large contiguous groups of Douglas fir, Japanese larch, and European larch, each species being kept by itself. The trees were planted seven years ago, being then four years old, in the case of the Douglas fir and European larch, and three years of age in the case of the Japanese larch. The first-named were bought cheaply as two-year-old seedlings at 3s. 6d. per thousand, and the Japanese larch as one-year-old seedlings. The soil is poor, light, and sandy, but of considerable

depth, and previously bore pines which, judging from those left round the plantation, must have been of goodly dimensions. The young trees were planted 3 ft. 9 in. apart each way, the ground having been previously "pitted" at a cost of 1s. 3d. per hundred pits, while 2s. 4d. per day was paid for labour in the insertion of the plants—equivalent to about 6s. per thousand. Scarcely anything required to be expended on re-planting, because very few deaths occurred. A sum of 7s. per acre was spent for work of this kind and in keeping the small plants clear of weeds, attention only being required during the first season. Fencing was unnecessary, owing to the absence of rabbits.

As to dimensions, the Douglas firs, at the date when the competition was held, had an average height of 16 ft., with a girth of 7 in. at 5 ft. from the ground. Recently the trees have been making annual growths of $3\frac{1}{2}$ to 4 ft. in length, in a few instances even a little more. The Japanese larch are much stronger than the European species, and at the time of inspection looked as if they would easily outstrip the common variety, although there is little difference in their average height at present. While the Japanese was quite free from pests the European larch had suffered to some extent from both aphids and canker.

In the same class as the foregoing plantation is one of Mr. E. G. Pretzman's on the Orwell estate. The Brookhill Park plantation, as it is called, is almost wholly made up of European larch and is now twenty years of age. It was the best plantation of its age viewed by the Judges, but fewer particulars could be given as regards cost and mode of formation, so that it was awarded only second prize. Although it has turned out fairly successful, it was dangerous to plant so much pure larch with only a few oaks interspersed, which have since been dominated by the conifers. The thinnings have been very light up to the present, but well carried out, leaving the trees on an average about 6 ft. apart. The result is that we have a close crop of shapely and useful poles about 35 ft. in height with a girth of $14\frac{1}{2}$ in. at 5 ft. from the ground.

The third prize was awarded to Colonel Petre for a 25 acre plantation composed of Scots pine. The land had previously been occupied by the birch, but this was cleared and the area systematically afforested. The species was well chosen as being the best adapted to the light sandy soil. The type of plants used (one-year-old seedlings placed in a temporary nursery for two years) was well advised, as was proved by the low death rate, and the cost, both for plants and planting, was remarkably small in spite of the fact that casual labour, obtained locally, carried out the operations.

Lord Cadogan's recently formed coniferous plantations occupied fourth place in this important class. These are growing surprisingly well upon soil of the poorest description—sand with a chalk subsoil. The excellent growth may partly be due to the thorough cultivation of the soil, which is ploughed to a depth of from 16 to 18 in. with the forest plough used by Mr. Hankins, head forester on the estate. The fault in regard to this plantation is its extremely mixed character. Although intended for a conifer plantation, and established upon soil suitable only for conifers, hardwoods of many sorts occur to the extent of one-third, while the conifers also are mixed indiscriminately. It was impossible to give an award under these circumstances, although the planting operations had been carefully and skilfully carried out.

Unsuccessful competitors included the Earl of Albemarle, whose wood was too irregular, Sir Ailwyn Fellowes, and Mr. Kenneth M. Clark, whose plantations had been over-thinned.

CLASS IV.—“Plantation mainly of conifers 5 to 30 years old, restricted to landowners with less than 300 acres of woodland.”

Only one award could be made in this class, viz., to Major Montgomerie, Garboldisham, two other entries being from the Northrepps Estate and Old Buckenham, where the woods had not been economically managed. Major Montgomerie's conifer plantation contained a number of trees which ought to have been removed, such as diseased larch, dead Scots pine, and over-dominant individuals, but future thinnings may remedy this defect to some extent. As it is, the plantation is too dense, but the close canopy has acted well in the production of long poles, free from side branches.

The plantation at Northrepps is composed largely of silver firs, very badly attacked by aphids, and a mixture of Scots pine, larch, sycamore, oak, poplar, &c., widely separated from each other, and therefore coarse, branchy, and almost useless from a timber point of view, but of some value for shelter. On the Old Buckenham property the plantation contained even a larger assortment of species, and may meet the requirements of game preservation, but it has certainly not been formed with any silvicultural object. The expense of planting in both of the above cases seems to have been excessive.

CLASS V.—“For the best example of the conversion of an unprofitable wood, over 10 acres in extent, into a thrifty condition, of which a clear history must be given.”

There were five entries from landowners seeking to improve existing plantations by the removal of the worst trees and the

substitution of a better young crop. Of these the Weasenham plantation of the Dowager Countess of Leicester is clearly the best. It consists of a piece of woodland, really the remnants left after the severe gale of 1895: the semi-isolated trees have sown the ground where cleared, giving rise to large numbers of seedlings. The species now appearing naturally in this way are Douglas fir, *Abies nobilis*, Norway spruce, Scots pine, oak, and birch. As the parent trees fulfil their double function of production and protection they are gradually removed, thus allowing the young plants to get the light which they require for their further development.

The second prize in this class was given to Lord Cadogan for a larch wood in process of conversion into a plantation of a different kind. In the opinion of the Judges mistakes had been made in the selection of the species for the young crop. Elm predominates, although this would not seem to be the proper tree for the poor, dry, sandy soil. The mixture is about two-thirds hardwoods and one-third conifers; the greater part of the area is, however, more suitable for Corsican or other pines. *Æsthetic* considerations have no doubt weighed in the choice of trees, and the rising wood is well adapted for shooting.

Sir T. Fowell Buxton showed plantations under this class. They are mature woods, which are being restocked by means of groups wherever gaps have occurred. The fault to be found in this case is not so much one of principle but rather of practice, the openings in the old wood being insufficient, and the groups of young plants much too limited in area.

CLASS VI.—“For the best managed Woodland Estate.”

There were seven entries, and the first prize was gained by Colonel Petre, Westwick. Several points of excellence brought about this result. First of all, the large proportion of woodland—not less than 45 per cent. of the total area being afforested; secondly, the plantations have a markedly thriving appearance; further, the species for the younger plantations have been chosen with exceptional skill as regards soil, situation, and aspect. The trees have also been planted economically and upon the most approved methods. Expense in fencing has been practically obviated by exterminating rabbits on the estate. Elsewhere one heard of measures adopted against this pest, but no estate was found where the effect had been so good as on the Westwick property. The main object of the owner has evidently been timber production, while on many estates this consideration has been subordinated to sport, shelter, and ornament. Even considered on *æsthetic* grounds, Westwick must take a high place among estates.

The second prize fell to the Earl of Leicester, Holkham, where the woodlands occupy 5 per cent. of the area. The most outstanding feature on this property from the forester's point of view is the planting of sand dunes on the sea coast. This difficult piece of work, carried out by the late Lord Leicester forty or fifty years ago, is not paralleled in the United Kingdom. The plantations extend for about three miles along the coast and comprise an area of 200 acres. The Corsican pine is the principal species used, and so well has it taken to the land that it is reproducing itself abundantly on some of the unplanted ground. As regards the plantations, many of them are good, the rapid growth of both the larch and Corsican pine being noted. Attention has also been given to various conifers such as do not usually occur in large quantities. Particular mention may be made of numerous fine specimens on the Fulmerston division of the estate. These include *Abies nobilis glauca*, *Thuja plicata*, *Picea sitkaensis*, *Pseudotsuga Douglasii*, *Libocedrus decurrens*, *Tsuga Mertensiana*, *Cupressus nootkatensis*, and *Abies magnifica*. The groves of *Quercus Ilex* commanded attention as being the best in our country. The younger plantations had been rather expensively formed and could not be said to have much economic value.

The Judges awarded a special bronze medal to Mr. E. G. Pretyma, M.P., for his Orwell estate. About 10 per cent. of the area is under trees, and some of the plantations, such as the Brookhill Park plantation already commented upon, have been particularly well managed. The treatment, too, of the coppice with standards is of considerable merit. As on most estates, game preservation has modified the system of forestry to a considerable extent. The ground is well adapted for the growth of Spanish chestnut, and much has been made of this species, especially in coppice. The treatment of the young plantations has been less systematic than at Westwick, and fewer particulars were forthcoming regarding expenditure upon formation. Near the Hall individual trees had been well cared for, some *Pinus insignis* being splendid examples of their kind, and one evergreen oak giving a measurement of no less than 15 ft. girth at 5 ft. from the ground.

Among so many woodland estates, where minute attention has been given to forestry, Lord Hastings' fine property, Melton Constable, could receive no award. The estate extends to 15,000 acres and the woodlands to 1,500 acres, so that although the percentage is good it does not approach that of the Westwick property. A great deal of attention is given to game preserving, and this has had its effect on the management to such an extent that the woods have suffered from a silvicultural point of view. The provision of sporting facilities

and ornamental effect were duly taken into account in judging, but timber production was regarded as the main consideration, and in this respect Melton Constable is lacking. Efforts are now being made to rectify matters, but it will be many years before the results are seen, for at present the majority of the woods are very thin or consist of poor standards over coppice, both being of low productive capacity. Drainage has not always been well attended to, and there is no proper gradation of ages or any attempt at a working plan. On the other hand there can be no doubt about the arboricultural beauty of the woodlands, particularly those in the neighbourhood of the park, which has been laid out with marked skill.

Other proprietors who entered their estates under Class VI. were Sir Ailwyn Fellowes, Mr. Thomas Barrett Lennard, and Mr. J. H. Gurney. Although possessing many features of interest and having a considerable indirect value, the plantations on these estates do not, in the opinion of the Judges, compare favourably with those that gained prizes. At Honingham there was no home nursery, and the trees used in forming new plantations were much too large for safe removal, while the thinning of the older woods had been too severe. Mr. J. H. Gurney had not many woods to show, so that the work on his estate could hardly be compared to that on the larger properties, but in some respects the management has been exceptionally good. The system of coppice with standards, for example, has been well carried out and some natural regeneration of conifers seems likely to yield valuable results. Some of the plantations have been over-thinned, however—rather a common weakness. On Mr. Barrett Lennard's estate there are considerable areas under Scots pine, but there is only a very small nursery and the woods have not been treated systematically. In this case, also, too many trees have been removed from the young plantations in the thinnings, and there is a lack of heavy timber on the estate—a fact for which the poor soil is largely responsible.

Home Nurseries.—Keen competition was the result of the numerous entries under this head. On several estates very few faults could be found with the material presented. Taking everything into account, the nursery at Culford, which was awarded a silver medal, is a good type of what is required. It is 7 acres in extent, and plants in all stages may be seen, from the newly germinated seedlings to the ordinary type of transplant ready for the woods, while there are also saplings of larger size. Mr. Hankins, the forester, has given a great deal of care to the fine stock of plants. His seed beds are of special interest, not only on account of their large extent, but because they bear such a large variety of seedlings. The Culford nursery was adjudged as being the best managed

large home nursery, and received first awards for seed beds of conifers and for the best plots of seedlings from seeds collected on the estate. Another nice nursery is that at Sprowston, where Sir Eustace Gurney takes such a personal interest in the propagation of trees. The first-rate nursery at Holkham lost points in the judging on account of there being no seed beds, but the best plots of transplanted trees were seen on this estate. Two nurseries were entered from Lord Beauchamp's Langley estate, where the plots of special merit were the pines, Douglas fir, and Sitka spruce. In the case of Mr. Kenneth Clark's nursery at Sudbourne, a higher award would probably have been given had there not been a lack of variety in the species grown. This nursery is no less than 7 acres in extent and practically no plants are purchased, the forester believing in raising them from seed of his own collection, and, on the whole, the young trees are growing healthily and are well rooted. Among the smaller nurseries there was scarcely any competition, it being stipulated in the entry form that the ground must not exceed half an acre in extent, whereas nearly all the nurseries shown had a greater area. Major Montgomerie, however, entered quite a good little nursery at Garboldisham and obtained an award for it.

Most of the twenty-one home nurseries entered were shown in excellent condition, and the stock of plants was generally well chosen. A considerably higher standard relatively was attained in the Nursery Competition than in the Plantations or Estates. Perhaps this may be taken as an indication of coming improvements in other departments on private estates. A very general fault was to allow too much space between the nursery lines, and the raising of plants from seed was not always well understood. In the selection of site, too, some serious errors had been made.

In conclusion, the Judges wish to record their appreciation of the kindness and hospitality which was shown to them during the inspection. The arrangements must have entailed a great deal of labour on the part of the Committee, which, however, has the satisfaction of feeling that everything went smoothly from start to finish. Particularly heavy work fell upon Mr. Blofeld, who was responsible for the itinerary and accompanied the Judges during the tour. He had the assistance of Mr. Burroughes and Mr. Brereton. In the early stages of preparation Mr. Coltman Rogers had much of the organising work to do, and to him the Judges are, to a large extent, indebted for securing such a large number of motor cars, thus saving a great deal of time, and in fact making the adjudication upon the twenty-two different estates possible within so brief a period as seven days.

Among those who generously placed their cars at the disposal of the Judges were Lord Cadogan, Lord Hastings, Lord Leicester, the Dowager Countess of Leicester, Sir Ailwyn Fellowes, Major Montgomerie, Sir Hugh Beevor, Mr. K. Williams, Magdalen College, Oxford, Mr. Pretymann, Mr. Brereton, Sir Thomas Gooch, and Mr. Blofeld. Hospitality was most kindly offered by many of the above, as well as by Sir Reginald Beauchamp, Colonel Petre, Mr. Burroughes, Sir Eustace Gurney, Mr. J. H. Gurney, Mr. Henry, Mr. Mortimer, Mr. E. M. Hansel, Mr. Hankins, and others. To all of these the Judges would express their gratitude; so much kindness made the work of adjudication quite a pleasure.

ALEXANDER SLATER, } *Judges.*
FRASER STORY, }

FARM PRIZE COMPETITION, 1911.

REPORT OF JUDGES IN CLASSES I. AND II.

THOSE whose privilege it was to visit Norfolk and Suffolk in connection with the Royal Agricultural Society's Farm Prize Competition of 1911 are not likely readily to forget their enjoyable tour. The first visit was paid in November, 1910, commencing with the district round about Norwich, and all enjoyed the experience of the exhilarating bracing air, the beautiful country with its dotted carpeting of old gold bracken and woodlands strewn with fallen leaves, over which the pheasants scurried in their hundreds, the while one motored along the pretty roads. The second visit was paid in February, and the third and last at the end of the month of May and beginning of June, on which occasion we were treated to the beautiful colouring of the red and white trifolium, delicately tinted sainfoin, and here and there a glorious blaze of red poppies, which gave the agricultural mind food for reflection on the necessity for the careful and constant cultivation with which the East Anglian farmer is confronted.

From an agricultural point of view, perhaps the most striking features were the large fields of turnips, which are here to be seen at their best, the numerous stacks of corn built out in the fields, the hedges growing on high-built banks, and the sight of horses working in the fields late into the afternoon, in fact during the month of February right into the dusk of evening. One field of swedes 130 acres in extent, all singled and set out on perfectly clean land, made a splendid

show in June, whatever may have been its fate in the drought which was to follow. One expected to see great things in the way of root crops, and in this we were not disappointed—indeed a spirit of envy was aroused. The stacking in the fields, while possessing the advantage of convenience at harvest time, and reducing the risk of loss in the unfortunate event of a homestead fire, made one think of the subsequent labour of haulage, and seemed to afford free play to the vermin which made their home in the hedge banks.

The system of double yokes, or two journeys to the fields for the teams of horses, raised the question as to whether there was any advantage in this method, either in the amount of work done, or to the horses. It was suggested by one of the party that the horses and men did not return to the stable until night, often wet and cold, and that there was consequently some risk of the former not receiving the same care and attention in grooming and feeding and the same good rest as is obtainable when only one journey to the fields is made, in which case the horses are in the stable for good in the early afternoon, and the horse-keeper has the remaining time at his disposal properly and thoroughly to attend his charge; indeed, the general appearance of many of the horses seen gave point to the argument.

But not so in East Suffolk; there, while doing apparently as much work, the horses get into the stable in fair time in the afternoon, having been resting only half an hour in the middle of the day, instead of two and a half hours, and whether Shires or Suffolks the horses looked none the worse on this account. Although East Suffolk is looked upon as the home of the Suffolk Punch, the western side of the county claims many fine studs, one of these being found on one of the competing farms, while on another farm visited, well away from the Suffolk border, in the county of Norfolk, none but Suffolk horses were kept.

A great feature in Norfolk is the enormous number of Irish cattle which are yearly imported, and the visitor wonders what Norfolk would do without Ireland, or possibly, Ireland without Norfolk. These cattle are to be seen in thousands on the fertile marshes of the sea-board during the spring and summer, where many of them become fat, the remainder being fattened at the homesteads during the winter months, where they serve the dual purpose of converting huge quantities of straw and roots into manure, and, with the assistance of cakes and meal, of producing beef. The cattle are not given cake for the first fourteen days after coming off the marshes, it being considered wasteful to do so. They are first thoroughly "broken" to roots and chaff, the cake coming later. The quantities of sliced roots

fed to the bullocks are surprising to any one unacquainted with East Anglian methods. The roots are sliced, sometimes by hand, and placed in large open wooden trays in the middle of the cattle yards which are generally open in the centre and covered in round the sides, where are the mangers for the cake and chaff or other dry food. As much as 3 bushels of roots are given to a bullock in a day, and it is one man's job to cut for and tend to thirty bullocks. The roots, after being sliced, are put into bushel skips, which are set out in rows and piled up one above the other in the root house ready for use. They are refilled as soon as empty, thus keeping a supply always at hand. Load upon load of straw is put into the yards to keep the cattle warm and clean, and to be broken down into manure, there being plenty of straw available, and no market for it in the outlying districts. Nor is there much waste of space, the cattle being closely herded; in one instance thirty polled cattle were seen in a yard 45 ft. by 50 ft. These animals were entirely attended to by one man, and they did him credit. It was noticed that the roots fed to cattle were not always clean, and besides the disappointment of seeing good food spoiled in this way, this want of attention is productive of very dirty trays in the yards. The custom seemed to be to run a few pigs in the cattle yard to eat up waste and anything else available.

Notwithstanding that Irish cattle for grazing are so great a feature in Norfolk, one naturally expected to see a fair number of the breed of cattle which take their name from these two counties, namely, the Norfolk and Suffolk Red Polls, now registered as "Red Polls," but curiously enough very few of these most useful dual-purpose cattle were to be seen on the farms visited; those seen were chiefly steers or heifers grazing, which not only get fat quickly, but are much sought after by butchers and always command top beef price. Norfolk and Suffolk, however, still possess many noted herds of this breed, while several herds are also distributed about different parts of the country.

The sheep seen were mainly crossbred: Suffolk crossed with Cotswold, or Lincoln crossed with Suffolk, or else of the pure Suffolk type; and they play an important part in the manuring of the land by consuming the turnips and having cake and corn at the same time.

The swede crop is frequently divided in varying proportions between the sheep flock and the cattle in the yards. Where no sheep are kept, all the roots are drawn off the land for bullock feeding. Where the land is eminently suitable for sheep and their fertilising influence, then most of the roots are left to be consumed where grown. Frequently, when it is intended to

fold the swedes on the land with sheep, the manuring for the crop takes the form of artificial manures, and where they are to be drawn off the land for bullock feeding, farmyard manure is given in good quantity to maintain the fertility. Following the famous Norfolk custom, barley, or sometimes oats, is grown after the swedes, and may receive a little special manure, but this is not generally necessary. The barley is undersown with small seeds for hay or grazing, the "seeds" mixture generally consisting of rye-grass and clover. If grown for hay, Italian rye-grass is generally used, but Pacey's perennial rye-grass is more favoured for the following wheat crop, as the Italian is said to draw the land and to "run to twitch," this last obviously being a reflection on the purity of the seed. Wheat follows the seeds and completes the famous four course which is the guiding principle of all our rotations, and is here only broken to admit of occasional green crops for the sheep, or catch crops, such as the growing of white clover in the wheat, and sainfoin or trifolium for hay or folding.

At the time of the last visit of inspection roots and corn looked well, and were not greatly suffering from drought, but rain was wanted, and the subsequent very dry weather must have been seriously felt. It would be a rare and pleasant experience to find a district comparatively free from twitch, and it is to be regretted that Norfolk and Suffolk show their full share of this insidious pest. This fact is worth noting when taken in conjunction with another all too frequently seen, namely, the utter disregard for the cleanliness of headlands, which must eventually become seed-beds for filth.

Perhaps it is to the credit of Farm Prize Competitions that some efforts to remedy dirty fields and foul headlands were noticeable. Outfalls had been cleared, hedges trimmed, gates and fences put in order, buildings repaired, and spouts cleaned out, although a little of this latter task was left for the Judges, had they been so inclined. There are buildings of all kinds to be found in the two counties, good, bad, and indifferent, but some very good. Rents generally are most reasonable; rates are not high; labour is good and reliable; so that, taken all round, the agriculturists of these two beautiful counties have much upon which to congratulate themselves, not the least being the generous sporting landlords for which East Anglia is noted.

We will now proceed to a brief description of the competition and of some of the winning farms. The following prizes were offered by the Norwich Local Committee for the best-managed farms, chiefly arable, in the counties of Norfolk and Suffolk:—

CLASS I.—Farm, chiefly Arable, of 500 acres or over, exclusive of Heath and Saltings. First Prize, 100*l*. Second Prize, 50*l*. Third Prize, 20*l*.

CLASS II.—Farm, chiefly Arable, of not less than 250 acres and under 500 acres, exclusive of Heath and Saltings. First Prize, 75*l*. Second Prize, 30*l*. Third Prize, 15*l*.

CLASS III.—Farm, chiefly Arable, of not less than 100 acres and under 250 acres, exclusive of Heath and Saltings. First Prize, 50*l*. Second Prize, 25*l*. Third Prize, 10*l*.

CLASS IV.—Farm, chiefly Arable, of not less than 50 acres and under 100 acres, exclusive of Heath and Saltings. First Prize, 40*l*. Second Prize, 20*l*. Third Prize, 10*l*.

CLASS V.—Farm, chiefly Arable, of not less than 10 acres and under 50 acres, exclusive of Heath and Saltings. First Prize, 20*l*. Second Prize, 10*l*. Third Prize, 5*l*.

The following entry fees were charged to Members of the Royal Agricultural Society of England and to Members of the Royal Norfolk and Suffolk Agricultural Associations: for Class I., 2*l*. 10*s*.; for Class II., 2*l*.; for Class III., 1*l*. 10*s*.; for Class IV., 1*l*.; for Class V., 10*s*. To non-members of any of the three above-mentioned institutions, double fees were charged.

The conditions of entry stipulated that the competition was to be limited to tenant farmers paying a *bonâ-fide* rent for at least three-fourths of the land in their occupation, the whole of which should be entered for competition. Competitors were required to give full particulars of any land in their occupation outside the area of the competition. In the case of a border farm being partly in one of the above-mentioned counties, and partly in an adjoining county not included in the competition, such farm was considered eligible, provided that the homestead and at least one-half of the land were situated in the area of the competitions. In assessing the proportion of arable and grass land on the occupation, the heath and saltings were not to be included. All land that had been laid down to pasture for ten years was considered as permanent pasture. Competitors must have had the land in their occupation for not less than two years. In the absence of sufficient merit, the Judges had power to withhold the prizes. The Judges were asked specially to consider general management with a view to profit; the system of cropping; cleanliness and management of both arable and grass land; the quality and suitability of live stock, especially that bred upon the farm; the state of gates, fences, and roads; the general neatness and state of cottages so far as the tenant was liable; the mode of book-keeping followed, if any; the management of the dairy and dairy produce where dairying was pursued; and the duration of the tenancy.

The following entries were received :—Class I., 13 entries ; Class II., 17 entries ; Class III., 15 entries ; Class IV., 11 entries ; Class V., 9 entries.

FIRST PRIZE FARM IN CLASS I.

Occupied by Mr. S. R. Sherwood, of Playford, Ipswich.

This farm consists of 416 acres arable, 139 acres grass, 176 acres heath, and 15 acres woods, is held on a yearly tenancy under the Marquess of Bristol, and has been occupied by Mr. Sherwood for sixteen years. About half of the arable land is of a very light and sandy character, full of stones, and liable to burn in very dry seasons. The remainder consists of mixed soil of fair depth. The upland pasture land is fairly good. There are some poor low-lying meadows, with a very good water supply. The cropping is in the main on the four-course system, with variations for catch cropping commencing on the wheat or oat stubbles. The catch crops include trifolium, rye, tares, cabbages, and kale, and are usually followed by roots, principally white turnips. The acreage under various crops this year was : wheat, 71 acres ; barley, 86 acres ; oats, 34 acres ; peas, 24 acres ; beans, 9 acres ; mangold, 35 acres ; turnips, 32 acres ; cabbage, 16 acres ; kale, 28 acres ; kohl rabi, 10 acres ; lucerne, 6 acres ; temporary pasture, 18 acres ; clover, 47 acres. The root crops come after wheat. Such land as is possible is cleaned in the autumn, particularly on the stiffer soil. For mangold from fifteen to twenty cartloads of farmyard manure per acre are given, and these are supplemented by from 3 to 5 cwt. of salt, the smaller quantity on the stiffer land, and 4 cwt. of special mangold manure. The mangold plants are top dressed with 1 cwt. per acre of nitrate of soda after being singled.

Swedes are manured with ten loads of farmyard manure and 3 cwt. of 30 per cent. superphosphate per acre. Should there not be sufficient farmyard manure to do all the land, then the swede crop receives 2 cwt. superphosphate and 3 cwt. dissolved bones per acre. Kohl rabi is treated like the swede crop, with the addition of 1 cwt. nitrate of soda as a top dressing if necessary. Drumhead cabbage receives the same treatment as mangold. White turnips are not manured as a rule, but occasionally 3 cwt. per acre of superphosphate are applied. Thousand headed kale is drilled early in the spring for sheep feeding during August and autumn. Mr. Sherwood is a great believer in this crop, considering it invaluable during the month of August, when other food is generally scarce. After drilling and horse hoeing between the rows, the kale crop may be either well harrowed across the

rows or "chopped out" as turnips are. If chopped out, the crop does much better in a dry season.

Barley follows roots fed on the land by sheep receiving cake, and is not especially manured, but if taken after wheat or oats, 4 cwt. per acre of a special barley manure is applied. Oats also usually follow roots fed on by sheep. If not, the crop is manured with 4 cwt. of superphosphate and top dressed with nitrate of soda. Clover is undersown in the barley crop. Sometimes a field of mixed seeds is put in with the corn crop on the poor, light land, and left down from two to four years for feed for cattle and sheep. The fertility of the soil is thus much improved, and good crops follow usually for several years. Sainfoin and lucerne are both grown, the sainfoin being left down for two or three years, and the lucerne for as long as six or seven years. There is, however, some difficulty in obtaining a good standing plant of sainfoin on this soil. Lucerne grows well, and gives heavy yields. Wheat follows clover or mixed seeds, peas or beans, and receives fifteen loads of farmyard manure. If farmyard manure is not available, then 4 or 5 cwt. of rape dust or castor meal, or else 3 cwt. of superphosphate and a top dressing in spring, with nitrate of soda and muriate of potash.

Catch cropping commences with the stubbles. As soon as possible after harvest about 20 acres of clean wheat stubble are drilled with trifolium. This is folded with sheep and lambs the following May. The land is broken up behind the sheep and drilled with swedes or white turnips. Twenty acres of rye are sown on wheat or pea stubble to be fed on by sheep and lambs early in spring, and followed by mangold, swedes, or white turnips. On one occasion a good piece of rye was grown, which was fed early in the spring, the land ploughed and drilled with rape, also fed on by sheep, then once again ploughed and drilled, this time with white turnip seed, and all three crops were good. Winter tares are also sown in the autumn, and either cut green or fed on by sheep and followed by roots. The fertility of the soil is much improved by the catch crops, as cake or corn is nearly always fed to the sheep consuming them. It is, however, very difficult to keep the land clean, and furthermore a little risk is run of not keeping it healthy for sheep, great care and watchfulness being necessary. The grassland is kept in good heart by the droppings from cake fed stock grazing thereon, and by dressings of compost and road scrapings, and occasionally farmyard manure. If any artificial manure is used, it is either dissolved bones or kainit, with superphosphate.

The stock formed a most important feature on this farm, horses, cattle, sheep, and pigs all being bred. The stock seen on each of our visits was as follows :—

First visit	Second visit	Third visit
19 working horses,	21 working horses,	13 working horses,
2 milk horses,	2 milk horses,	2 milk horses,
4 nag horses,	4 nag horses,	6 two-year-olds,
16 colts,	5 yearlings,	5 yearlings,
1 stallion,	6 two-year-olds,	8 mares,
1 donkey,	1 stallion,	8 foals,
42 cows,	1 donkey,	1 stallion,
2 bulls,	36 cows,	4 nag horses,
4 calves,	27 yearlings,	1 donkey,
46 young cattle,	17 calves,	35 cows,
26 fattening cattle,	14 young cattle,	10 two-year-old heifers,
206 ewes,	22 fattening cattle,	36 yearlings,
20 wethers,	2 bulls,	9 fattening stock,
100 ewe tegs,	190 ewes,	16 calves,
7 rams,	255 lambs,	2 bulls,
7 sows,	100 ewe tegs,	172 ewes,
6 fat hogs,	8 rams,	257 lambs,
27 store pigs,	7 sows,	95 shearling ewes,
450 fowls	21 fattening hogs,	7 rams,
	31 pigs,	7 sows,
	500 fowls	5 fat hogs,
		30 store pigs,
		25 sucking pigs,
		600 fowls.

Horses.—These are of the Shire type, and all bred upon the farm except three. A good Shire stallion is kept. From seven to ten foals are reared each year, the best filly foals being always kept. Colts are put to work in autumn when about two and a half years old, and geldings sold at five years old. The horse feed consists of 5 stones of corn per week per horse, with two or three trusses of clover mixture hay when in full work. In summer time the quantity of corn is only about 3 stones per week, as the horses go out to grass or have lucerne cut for them. The corn consists of crushed oats, with maize, bean meal, and bran. The colts run on the marshes during summer and have no corn. During winter they receive about 2 stones of oats per week, with hay. Foals, after weaning, are kept going well with oats and hay during winter.

Cattle.—A pedigree Shorthorn bull from a good milking strain is kept. Nearly all the cows are home-bred, and many of them are pedigree animals. Milk is sold at Ipswich, delivered night and morning. Calves are weaned and reared at home, the best heifers being retained for the herd, the others sold fat at from eighteen months to two years old. The calves are reared on milk when it is plentiful; if not, on Brantom's calf-meal, which is found to be useful.

Cows in full milk are given 3 to 4 lb. of cotton cake, and 2 lb. of bean meal or cotton seed meal per diem. During summer the cows are kept out on the low meadows, and receive no corn. In the autumn they have green maize and drum-head cabbage,

and in winter pulped mangold, with chaff and hay. The milk from each cow is weighed once a week. One non-pedigree home-bred Shorthorn has given over 1,000 gallons in thirty-six weeks.

Fattening cattle commence with 2 lb. linseed cake, and 2 lb. cotton cake. Later on 2 lb. Thorley's cake are given and 2 lb. meal. The meal is a mixture of peas, beans, and maize. The proportions vary according to size of cattle. Young stock receive from 1 to 3 lb. per head of linseed cake and crushed oats mixed, with hay, &c. Calves receive linseed cake and beans, or crushed oats as soon as they will take to them.

Sheep.—The flock of pedigree Suffolk sheep is a most important feature of the farm, both as a source of revenue, and as a means of maintaining the high state of fertility. The success of the Playford flock, which was started in 1881, and registered in the Suffolk Society's Flock Book in 1887, has been very considerable in the showyard and for export purposes. The ewes are large framed, typical of the breed, dense in fleece, and close to the ground. The Suffolk sheep are good feeders, making first-class mutton at eight months old. They are prolific breeders, thirty lambs to the score of ewes often being reared. The chief object with this flock is ram lamb breeding. From sixty to seventy of these are sold annually for stud purposes, many going abroad. As much as 100 guineas have been paid for a lamb less than seven months old. Great care is taken in the selection of sires, and only the best ewe lambs are retained to make up the flock. Taking the produce of wool, lambs, and prize-money, the average revenue during the past two years works out at over 6*l.* per ewe. From June to November the sheep live on the layers, and on kale, mustard, grass land, and stubbles, and have no corn. From November onwards they receive daily $\frac{3}{4}$ lb. of a mixture of linseed cake, crushed oats, and bran. Lambing commences in January, because of the ram breeding. When suckling their lambs the ewes receive 1 lb. per head of linseed cake, crushed oats, and bran. Lambs have what they will clean up of a mixture consisting of linseed cake, crushed oats, lamb food, and split peas or beans. Ram lambs receive from 1 to $1\frac{1}{2}$ lb. of cake and corn per head. Fattening tegs are finished on kale, cabbage, and later on kohlrabi and swedes, and have from $\frac{3}{4}$ to 1 lb. per head cake and corn. Mr. Sherwood relies on kale and cabbage for summer and autumn feeding, and to a great extent upon white turnips for winter and early spring. A good many mangold are used during late spring and summer.

With sheep breeders in this district it is considered desirable, when lambing takes place in January, to keep ewes in the wool

until weaning time, which is in May or early June, as they are then not so likely to suffer from garget, although it is said, however, by some that this weakens the ewes, as the wool requires feeding. Some flockmasters who lamb down in March clip their sheep late in June, and the lambs are not weaned until July. The cows, cattle, and colts run on the low meadows, the sheep never being allowed to go there.

Pigs.—Seven or eight sows of the Large Black breed are kept and put to the Large White boar. All pigs are fattened and sold at from seven to ten score weights.

The sows live on kohl rabi, cabbage, and water, except shortly before farrowing, when they get a little sharps and mixed corn. Young pigs after weaning are kept on with $\frac{3}{4}$ lb. of sharps and $\frac{1}{4}$ lb. mixed corn. Fat hogs have what they will take of a mixture consisting of two parts barley, one of peas, and one of maize, all ground, with a few whole peas, in the middle of the day, and cabbage, kale, or mangold, and fresh, clean water.

Fowls.—There are some 500 fowls, consisting of Buff Orpingtons, White Wyandottes, and Houdans. These are very well looked after, and produce a considerable return. Encouragement allowances of a 1*d.* per score eggs, 6*d.* per couple of chickens reared, and 1*s.* in the pound for poultry produce are given.

The buildings are useful and kept in good order. The sheep-house is a very suitable and useful building, erected by the tenant himself, but subsequently paid for by the landlord. There are fifteen cottages on the farm, but the tenant is not responsible for upkeep.

The ordinary agricultural labourer gets 13*s.* per week, with 4*d.* per hour overtime in hay time, and 1 bushel of malt for brewing. Harvest work, which is chiefly done by the piece, comes to about 7*l.* for a month's work, with 3 bushels of malt and hops. Horse-keepers get from 14*s.* to 14*s.* 6*d.* per week, with the same extras as labourers. Milkers receive 17*s.* per week. Several of the best men live rent free, with cottage and garden. They have good gardens. Shepherds' wages work out rather higher, because of the special labour entailed with a show flock. Horse-keepers come to work at 5 o'clock in the morning, turning out at 6 o'clock in the summer and 7 o'clock in the winter, returning to the stable at 3. The cost of labour, including grooms, gardeners, carpenters, and machine-men amounts to about 1,200*l.* per annum. Purchased foods cost 700*l.* or 800*l.*, and artificial manures 100*l.* The home-grown produce consumed on the farm is valued at 300*l.* per annum.

Perhaps this may not be an ideal show farm, but the land is well done, as is also the large head of stock, which is in

every way most suitable to the occupation. Some land, as already indicated, is very light and naturally very poor, being worth but little to farm, while the heath is worth nothing except for game and as a sheep run in winter.

Altogether, this is a well-managed occupation that impresses one as being well farmed by a good business man. The splendid stock, mostly home bred, is a great attraction here, and did much towards obtaining the premier position for Mr. Sherwood in the competition. It is interesting to recall that Mr. Sherwood gained, with another occupation, second place in the Farm Competitions held in the year 1886, and the fact that he heads the list in a large competition twenty-five years afterwards shows that he has kept going, and is therefore all the more to be congratulated.

FIRST PRIZE FARM IN CLASS II.

Occupied by Mr. George W. Rackham, Hill Farm, Hethel, Norwich.

This farm is situated seven miles from Norwich, and five from Wymondham, the nearest station being Ashwellthorpe, G.E.R. The farm is held on a yearly tenancy under J. H. Gurney, Esq., of Keswick Hall, Norwich, and consists of 273 acres arable and 88 acres grass. The holding is carried on principally as a dairy farm.

There are about 200 acres good land, the remainder being light land.

The arable land is cropped mostly on the Norfolk four-course system, namely, roots, barley, clover, wheat, but the corn crop is the shortest. In 1911 the cropping was as follows:—Wheat, 35 acres; oats, 15 acres; barley, 70 acres; roots, 70 acres (40 mangold, 10 cabbage, 10 swedes, 10 turnips), 5 acres of vetches to be cut green, and 78 acres of clover for hay. All the farmyard manure is applied in two breaks, namely, for the wheat, and for the roots, the latter receiving in addition 4 cwt. per acre of artificial manure, suitable for their kind, and obtained from the West Norfolk Farmers' Manure Company. The corn crops sometimes receive a small dressing of artificial manure, obtained from the same source. The seeds mixture used for clover hay is composed of 15 lb. clover and $\frac{1}{2}$ peck of Italian rye-grass and $\frac{1}{2}$ peck of Pacey's perennial rye-grass. This is grown once in eight years, the clover break in the intervening fourth year being replaced by giant sainfoin, or by a mixture, one of 10 lb. cow-grass, 2 lb. alsike, 2 lb. red suckling clover, 2 lb. white clover, $\frac{1}{2}$ peck Italian rye-grass, and $\frac{1}{2}$ peck Pacey's rye-grass. Thus the hay crop in any one year now consists of half clover, quarter sainfoin, and quarter cow-grass mixture.

The pastures, through which a stream runs, with the exception of a new one, are of poor quality. This new one was laid down with lucerne about twelve years ago, and cut green the first few years for the cows : afterwards for some years the first crop was made into hay, and the rest fed on the land. It is now the best pasture on the farm for early and late feed. Most of the lucerne has died out, and a splendid bottom has been formed by natural grass and suckling clover which have come of their own accord, from the seeds deposited by cows after eating mixed hay.

The stock on the farm on the occasion of our visits consisted of :—

First visit	Second visit	Third visit
80 cows, in-milk	80 cows, in-milk.	72 cows, in-milk.
20 cows, dry	6 cows, dry	12 cows, dry.
2 bulls.	2 bulls	2 bulls.
100 fat hoggets	4 calves.	1 calf.
100 store pigs	121 fat pigs.	110 fat and store pigs
12 cart-horses.	1 sow.	1 sow
2 colts.	12 cart-horses.	11 cart-horses.
2 hackneys	4 colts.	4 colts at marsh.
2 foals.	2 hackneys	2 hackneys.

The farm work is done by about twelve horses, all Shires, bred on the farm. They are fed in summer on lucerne or vetches, and turned out to grass at night. In winter they have 3 stones of oats and 2 stones of beans per week, with hay and straw chaff, and long hay at night. The hours of work are from 6 to 11 o'clock in the morning and 1.30 to 6 o'clock in the afternoon for horsemen and labourers alike.

The cows vary in number so as to ensure a regular supply of milk all the year. They are bought as required, and about 25 per cent. are sold out annually, most of them fat. The best cows are kept and calved down, their calves being sold at one week old. Two pedigree bulls from a good milking strain are kept, with the idea of bringing good heifer calves for the herd. The best milkers receive 2 bushels of roots in two meals, also 2 bushels of chaff, half hay and half oat straw, mixed with $\frac{1}{2}$ bushel of pulped mangolds divided over three meals ; also 4 lb. oat and bean meal and 2 lb. decorticated cotton meal. Fattening cows receive 2 lb. linseed cake and 2 lb. cotton cake extra. The cows all have the chance of taking water when outside, so as not to be limited to the supply indoors. During summer time they come indoors to be milked, and receive their cake at the same time. The milk is sold on yearly contracts in London and Norwich for regular quantities all the year round ; consequently forage crops have to be grown to come in succession, in order that a regular supply of milk may be kept up.

Great attention is paid to keep the cows in perfect health. Mr. Rackham believes in the open air life as far as the climate will permit, and when it is necessary to have the cows indoors the houses are as well ventilated as possible, without putting the animals in draughts. The milk from each cow is weighed every milking, and a record kept. Three or four of them have given over 1,200 gallons in the year, the average yield of the herd being over 750 gallons for the year. The poor milkers are sold fat, excepting those which would make more money freshly calved, which are so sold. During early summer the cows live entirely on the pastures. When this becomes deficient, lucerne or vetches are thrown out on to the pastures, and dry food given. Early turnips, maize and cabbages follow on as extra food on the pastures. The cows are housed for the night at the end of October, but continue out all day until bad weather sets in, when they go out for $1\frac{1}{2}$ hours for exercise and water.

The sheep seen consisted of 100 half-bred Suffolk cross Cotswold lambs, which are bought in early in July, to follow the cows on the "Ollands." When this feed gets short, the sheep have cabbages and turnips, with 1 lb. linseed cake and a $\frac{1}{4}$ lb. pollard daily. They are sold fat in November.

At some off premises on the farm 120 pigs are kept fattening the greater part of the year. They are bought in at about 2*l.* each and sold as baconers. The pigs seen were mostly Large White Yorkshires and a few Berkshires. Their food consisted of a mixture of three parts foreign barley, one part gram, one part middlings, and one part "Ureco."

The standing wages for labourers are 13*s.* a week, but as most work is put out as piece-work they earn considerably more. For harvest the men receive 6*l.* 15*s.*, and usually finish in three weeks. The cowmen have four shillings a week in addition with calf money at the rate of 6*d.* to the head cowman and 6*d.* to the man who takes the cow to milk for every calf a week old, which includes any extra time they may work. Overtime is paid at the rate of 3*d.* per hour, and 6*d.* per day for beer is given when in the hay. There are on the farm ten good cottages with large gardens, which are let to the men at from 1*s.* 6*d.* to 2*s.* per week, Mr. Rackham paying the rates. Labour here costs about 45*s.* an acre, purchased foods 800*l.* per annum, and artificial manures 120*l.*

The buildings are very compact and suitable for the purpose for which they are used. The cowhouses are light and airy, being quite model ones, paved with grooved Staffordshire bricks and concrete. All the outside yards are paved with the latter. The mangers are also of concrete, and water is laid on to them, as it is also for cleaning purposes. The

greater part of the drainage from the buildings is taken off by surface drains, which are found to be the best, as there is then no trouble with blocked drains. All the liquid manure goes into a large tank, and is carted on to the pastures from time to time. The manure is removed from the cowhouses in tipping trollies, which are on runners suspended from an overhead rail, by which means they are run to a covered yard quite away from the cowhouses, where the manure is stored. This ingenious arrangement is well worth seeing.

The food preparing arrangements are also interesting. The chaffcutter is fitted with a blower, which blows the chaff up a pipe to a loft above, to be dropped down as required. The roots are lifted by a specially constructed lifter into a cleaner, which drops them into a pulper, or into a slicer which is on a loft, the ground roots dropping in two heaps on the floor of the food preparing house. The corn is all ground by 4-ft. French burr stones, a 10 H.P. Blackstone oil engine providing the power.

The premises and the farm house are lighted with acetylene gas, which, according to Mr. Rackham, gives a splendid light and requires very little attention.

This is a model dairy farm, everything being up to date. The buildings are good. The farm is well equipped with good implements which are kept in excellent order, and well used. There are several excellent arrangements for labour saving, and yet the labour bill is high, but a most satisfactory return is obtained. The farm mainly consists of rich land, most of it clean, with crops good and yielding well. The very good herd of heavy milking cows are kept in splendid condition, being liberally fed with cake and corn, and as a result their rich manure goes far to preserve the fertility which here is so noticeable. The general appearance of the homestead and buildings is neat and clean. The cottages are good and well kept.

Mr. Rackham appears to be making the most of his opportunities and occupation.

SECOND PRIZE FARM IN CLASS I.

Occupied by Mr. F. John Knight, Abbey Farm, East Walton, King's Lynn.

This farm consists of 900 acres arable and 192 acres of permanent pasture, with 90 acres of salt marshes at South Wootton, and is held on a yearly tenancy under Henry Birkbeck, Esq., High House, Westacre.

The land is mostly very light, with a chalk subsoil. About one-third of the farm is sand with gravel subsoil. The famous Norfolk "four-course" system of cropping is adopted, with

catch crops on the stubbles or "ollands" (clover ley) during late summer and autumn.

In 1911 the cropping was as follows :—50 acres wheat, 100 acres oats, 302 acres barley, 120 acres swedes, 55 acres swedes and kale, 5 acres early drumhead cabbage, 240 acres small seeds for hay and feeding (of which 200 acres are sown with mixed seeds and 40 acres with sainfoin), 20 acres mangolds, 11 acres vetches, and 11 acres early white turnips.

On this farm the crops are manured as follows :—Swedes, 3 cwt. West Norfolk No. 2 turnip manure; barley, 3 cwt. West Norfolk barley manure, when considered necessary; mangolds, ten loads farmyard manure; wheat, ten loads farmyard manure; oats, eight to ten loads farmyard manure, as far as it will go.

When farmyard manure is scarce, 1 cwt. of nitrate of soda per acre is used as a top-dressing for oats.

Sheep feed over the "olland" which is coming for oats, and remain on the land right up to the time of ploughing for the seed bed.

For turnips the land is baulked up and rolled in front of the drill, $2\frac{1}{2}$ pints of seed being sown per acre. The land is rolled again a few days after sowing, and manure is put on the baulk with a Wallace drill, the plough coming behind to make the baulk, the manure being covered in at the same time. Small seeds are sown with a 30-coulter drill immediately behind the corn drill, but across the latter, or "athwart them" in popular Norfolk language. Harrowing then takes place, and rib-rolling also, the idea being to retain the moisture in the sand as much as possible. Sainfoin is sown in a similar manner, immediately behind the corn drill, and harrowed and rolled in. Three bushels of sainfoin are sown per acre, and about 14 lb. of mixed seed. The former is grown for feeding lambs, and is found to be a good change from clover, the lambs usually thriving on it.

The "small seeds" mixture, usually undersown with the barley crop, is as follows :—

6 lb. giant hybrid cow-grass	} per acre
3 lb. white clover	
3 lb. trefoil or red clover	
1 peck Italian rye-grass	

About 30 acres of sainfoin are sown, this crop being taken after turnips and drilled at 3 bushels of seed per acre. Twenty acres Kidney vetch grown for early feed were sown after kale and swedes.

All small seeds are drilled with a coulter drill as soon as possible behind the corn drill, on account of the dry nature of the soil.

All the hay, straw, and roots are consumed on the holding, none being sold.

The land is manured through sheep folded on roots and by farmyard manure made by the bullocks, which consume the straw and roots along with other foods. As far as possible all corn is sold, except when bran and beans are dearer than oats, at which time the latter are used crushed for horse corn. The beans are ground fairly fine and mixed with bran. Finely ground maize is also occasionally used.

The stock was as follows :—

First visit	Second visit	Third visit
52 bullocks (grazing).	58 store bullocks.	68 store bullocks.
24 working horses.	24 working horses.	24 working horses.
5 yearlings	5 yearlings.	5 two-year-olds.
4 nag horses.	4 nag horses.	8 yearlings.
8 foals.	8 foals.	1 foal.
599 ewes.	574 ewes.	5 nag horses.
782 hoggets (grazing).	140 hoggets (grazing).	529 ewes.
9 rams.	— lambs uncoun ted.	718 lambs.
13 store pigs.	9 rams.	8 rams.
	16 store pigs.	40 shearling ewes.
		1 Hunter filly.

The twenty-four working horses are of a light Shire type, and teams of four horses each are worked. On account of the land being so sandy, the horses kept are as light and active as possible. The stables are adapted to four-horse teams, and, in addition to the advantage of economy, it is found that by giving one man only four horses to look after, better results are obtained. Moreover this system increases the number of ploughmen available. The cart-horses are given 1 stone of bran and beans each day, one part beans to four parts bran, or, when bran and beans are dearer than oats, 1 stone of crushed oats with 2 lb. linseed cake, pulped roots and cut straw *ad lib*. Hay is not always plentiful on such sandy soil, but the horses have it whenever possible. Two pounds of linseed cake are always given in the winter months' this food being generally soaked in tubs and given wet. The mares are worked right to the time of foaling, the foals being weaned early, as the mares are required for the harvest. As soon as possible, the foals and their dams are sent to the good marsh land, where they grow well. Separate horses are kept for the steward, yardsman, and shepherd, and each man is responsible for his horse, which does all the work required in its department. In summer the horses receive 1 stone of corn, which is given to them in their stalls, and at night in bins on the pastures.

Cattle.—About seventy or eighty bullocks are bought about Christmas time, as old and as big for the money as obtainable. They are kept as stores during the remainder of the winter,

and go to the marshes in April, where they remain all the summer, some of them being sold off "fat." About fifty return late in August, and are grazed (fed in yards) and sold at Christmas. Roots, when plentiful, are given almost *ad lib.* to the bullocks, which receive in addition 7 to 14 lb. of cake, half cotton (Egyptian), half linseed, and 3 lb. bean meal. The long hay is given to the grazing bullocks, because sometimes it is difficult to keep them from scouring. The bullocks are simply dung-making machines for the farm to make the straw into manure. They are fed, when stores, on pulped roots, 4 lb. cotton and linseed cake mixed, cut straw, and long straw. When grazing they receive 7 to 14 lb. mixed cake, 3 lb. bean meal, with coarse-cut roots and long hay. In winter the stores run out on the grasses, and come up into the yards at noontime.

Sheep.—Six hundred half-bred ewes are kept. They are by Cotswold rams out of Suffolk ewes. The Oxford Down rams are put to the ewes in October, and lambing usually commences about the last week in February, the lambs being all kept and grazed right out on the place, and are usually all gone by March. The idea is to push the lambs along and get them fat as soon as possible. The ewes feed over the "ollands" in iron hurdles at night, and run on the grasses and commons in the daytime until November, when they go to roots at night. During early December they are given linseed cake or Windsor beans thrown on clean dry grasses, never trough fed, because the ewes knock one another about round the troughs, and Mr. Knight thinks this causes or tends to cause premature lambing or abortion. They receive green-top swedes till lambing is nearly due, then half kale and half swedes right through lambing. White turnips are not a success on this land. The lambs run on the seeds and "eddisches" until early cabbages and white turnips are ready. In October they are divided into twelve score lots, and have ground roots with linseed and cotton cake, half and half, 1 stone to twenty sheep. The roots for the bullocks are drawn off in front of the lambs, eight drills being taken and twenty left.

The buildings are good, being quite sufficient for the farm, and are tidily kept by the tenant. There are thirteen cottages occupied by the steward and men working on the farm, some of whom pay rent, according to agreement. The landlord is responsible for the outside repairs, and also generously helps with the inside as well. Labour consists of twenty-three men and boys, including the steward, who takes daily orders, and does nothing on his own account unless the master is absent. Outside labour is taken on for hoeing and harvest, and piece-work is done whenever possible.

Turnips are hoed and singled twice over at 7s. 6d. per acre, mangolds taken up and haled (put into heaps or clamps) at from 7s. to 8s. per acre. About 1,100l. is spent annually on labour, the average wage per labourer, including harvest, being about 16s. to 17s. per week. Purchased foods amount to about 600l. annually. The home-grown produce consumed on the farm is valued at about 400l. per year.

This is a large light land farm, some of it very poor blowing sand, and consequently much depends upon a good rainfall. It is run chiefly as a sheep and barley producing concern. The land is clean and well managed. Swedes, as has been shown, are the principal root crop, the large acreage of these making a splendid show in early June, all singled, set out, and clean, whatever may have been their fate afterwards in the long drought. It was the all-round good management of this large and very poor farm, with its suitable stock, that gained for Mr. Knight the second position in the award list, and the well-deserved honour of being the highest placed competitor in the county of Norfolk.

SECOND PRIZE FARM IN CLASS II.

Occupied by Mr. Anthony Knight, West Newton, King's Lynn.

This farm consists of 225 acres arable and 100 acres of grass land, and is held on a yearly tenancy under His Majesty the King.

The cropping is on the four-course system, and in 1911 was as follows :—60 acres of barley, 10 acres of mangold, 53 acres of swedes, 10 acres of early turnips, 4 acres of cabbage, 22 acres of wheat, 22 acres of oats, and 44 acres of clover "seeds." The barley is undersown with small seeds, consisting of 14 lb. per acre giant red clover and 1 peck of Pacey's perennial ryegrass.

Wheat and oats are both taken after clover ley, on which ten loads per acre of farmyard manure is applied and ploughed in. Mangolds are manured with eight loads per acre of farmyard manure and 4 cwt. per acre of West Norfolk mangold manure. The swede crop is entirely manured with West Norfolk turnip manure.

About 2 acres of vetches are sown on the stubble each year for mowing in July, and these are followed by turnips. If the weather is suitable a piece of land is broken up after clover hay is carted, and sown with white turnips to draw in winter. The pastures are treated with grass fertiliser, about 25 acres being done each year. When the barley crop follows mangolds or cabbages which have been drawn off the land, about 3 cwt. of artificial barley manure is given.

About forty-five cows are kept. The herd is renewed every year by bringing in ten home-bred heifers about the month of October, owing to milk being required for Sandringham House in greater quantities at that time. The cows in summer have about 2 lb. of cotton cake. In winter time they are fed on 2 bushels of pulped roots mixed with cut straw chaff, and a small quantity of long hay. The artificial food given consists of 3 to 4 lb. cotton cake and 2 to 3 lb. of warm soaked brewers' grains, each cow being fed according to her milk production. The milk of each is weighed daily and a strict record is kept. In winter time the dry cows run out in the pasture during the day, but are brought in at night and given a little hay. In summer they are turned out on to the marshes. The milk, when not required at Sandringham House, is sent to London.

In winter two loads of cabbages are thrown on to the grasses each day for the cows when out at exercise. All calves are brought up, the heifers being very carefully marked, so as to keep the best milking strain. The calves are not kept on the cows for more than four days, after which they are suckled with one pint of new milk diluted with soaked linseed cake. If there is any separated milk available, that is used instead of new milk. All calves are weaned at from six weeks to two months old, and are then brought on to water with hay, roots, and linseed cake. The best heifer calves are kept, the rest bulled and sold as down calvers off the marshes, the steer calves being also sold off the marshes at about two years old. They have no cake on the marshes. With the view to milk production, great care is taken in the selection of the sire for the herd.

Horses.—Ten horses are kept on the farm. This will appear a large number for the size of the holding, but is accounted for by the fact that estate work keeps some of them occupied practically throughout the year. Mr. Knight, who has the privilege of using His Majesty's Shire stallion, breeds all the horses he can, and is able to sell one or two every year. The hours of work for the horses here are : in winter, 7 a.m. to 3 p.m. ; in summer, 6 a.m. to 3.30 p.m.

There are 260 sheep on the farm, crossbred, out of Suffolk ewes by a Cotswold ram. These, when feeding the roots on the land, have $\frac{1}{2}$ lb. of linseed cake and cotton cake mixed. The sheep here are simply used to consume the roots on the land as a fertilising medium, and are not kept on the farm all the year round.

There are five cottages with the farm, which are kept in repair by the landlord. All fencing and drainage is kept in order by the tenant.

*Acreage under Crops and Grass and Number of Live Stock
in the Counties of Norfolk and Suffolk in the Years 1911
and 1886.*

	Norfolk		Suffolk	
	1911	1886	1911	1886
Total Area (excluding water).	Acres 1,308,156		Acres 945,411	
Total Acreage under Crops and Grass ¹	1,088,640	1,091,506	759,275	780,448
Arable Land	782,376	816,143	566,826	605,478
Permanent Grass	286,264	275,363	192,449	174,970
Wheat	138,866	156,283	121,041	118,873
Barley or Bere	169,826	211,930	111,805	151,630
Oats	77,733	37,235	49,759	25,407
Rye	4,395	6,886	4,510	6,404
Beans	14,501	12,217	41,822	36,826
Peas	10,001	7,915	20,039	24,501
Potatoes	12,667	5,876	3,346	2,452
Turnips and Swedes	110,723	130,499	44,872	55,434
Mangold	56,182	50,435	35,109	36,211
Cabbage	1,969		1,927	
Kohl-Rabi	445	3,687 ⁴	1,295	4,100 ⁴
Rape	786		1,454	
Vetches or Tares	4,572		5,522	
Lucerne	2,294	14,079 ⁴	5,547	22,135 ⁴
Other Crops	6,703		5,631	
Small Fruit	6,083		1,086	
Clover, Sainfoin, and Grasses under Rotation	159,063	169,289	84,462	94,893
Bare Fallow	6,067	9,832	27,797	26,612
Mountain and Heath Land used for Grazing.	42,843	— ³	30,644	— ³
Horses used for Agricultural purposes	No. 46,854 ²	No. 43,718	No. 32,537 ²	No. 32,262
Stallions	401		272	
Others:—One year and over	11,699	19,918 ⁴	6,119	10,355 ⁴
" Under one year	4,978		2,846	
TOTAL OF HORSES	63,932	63,636	41,774	42,617
Cows and { In milk	27,628	33,354 ⁴	21,020	23,652 ⁴
Heifers { In calf, but not in milk	9,120		6,500	
Other Cattle:—Two years and above	41,314	48,397	14,058	17,322
" " One year and under two	32,582	49,306 ⁴	20,429	29,721 ⁴
" " Under one year	28,320		18,587	
TOTAL OF CATTLE	138,944	131,057	89,603	70,695
Ewes kept for breeding	173,239	325,571 ⁴	143,923	230,954 ⁴
Other Sheep:—One year and above	105,043		44,282	
" " Under one year	221,305	243,013	165,981	203,082
TOTAL OF SHEEP	499,587	568,584	354,186	433,986
Sows kept for breeding	14,555	88,919 ⁴	21,720	121,886 ⁴
Other Pigs	102,608		157,402	
TOTAL OF PIGS	117,193	88,919	179,122	121,886

¹ Not including Mountain and Heath Land.² Including Mares kept for breeding.³ Returns of Mountain and Heath Land were not collected in 1886.⁴ Not separately distinguished in 1886.

Labour amounts to 450*l.* per annum, and artificial manures to 38*l.*

This is a pretty farm on the Sandringham estate at West Newton. The land is light, mostly clean, and well done. There were some very good corn crops, including the best field of oats seen by the Judges. The wheat was not quite so good. The marshes, which are some little distance away, are well grazed with young stock and well cared for, thistles being carefully cut down. The dairy is well managed, and most of the young stock, which is all bred on the farm, were nice, and promised well for the future of the herd. The buildings are very good and particularly well kept. The general appearance of this homestead is very smart.

The statistical table on page 317 has been kindly supplied by Mr. R. H. Rew, of the Board of Agriculture.

The Judges and the writer desire to return thanks to the competitors for the kindness and courtesy with which they were everywhere received.

WM. H. HOGG.

Woburn Experimental Farm,
Aspley Guise, R.S.O

We subscribe to the foregoing Report—

A. H. CLARK,
D ABBOTT GREEN.

REPORT OF JUDGES IN CLASSES III., IV. AND V.

FIRST PRIZE FARM IN CLASS III.

Occupied by Mr. G. W. Turner, of The Dial, Earl Soham, Framlingham.

This farm is held on lease under T. O Springfield, Esq., of Metton, Roughton, and consists of 141 acres, made up of 96 acres of arable and 45 acres of pasture land. It is a medium heavy soil, with clay subsoil.

The arable land is generally worked on a four-course system, viz.:—

```

      Barley
      |
  Beans or Clover
      |
      Wheat
      |
  Roots and Fallow, also Trefoil.
  
```

The clover ley is left down for one year, being twice mown. Eight acres of clover were very good, about $1\frac{1}{4}$ tons to the acre being the average yield. This received 15 tons per acre of farmyard manure in the spring. The seed mixture consists of per acre: 1 stone of English red clover and 1 pint of trefoil.

The land intended for mangolds receives about 16 tons farmyard manure and 5 cwt. mangold manure per acre. Golden Tankard and Golden Globe are the varieties generally grown, the seed being sown at the rate of 7 lb. per acre on ridges 32 in. apart, and singled out at not more than 12 to 15 in. in the rows. Mr. Turner does not believe in top-dressing after singling, as he does not think the roots keep as well.

The barley stubble intended for beans receives farmyard manure. The land coming barley gets 5 cwt. per acre superphosphate or special barley manure, according to whether the roots had super or a compound manure.

The pasture land receives 6 cwt. of basic slag per acre every other year.

The cattle consist of three cows, in-milk or in-calf, twenty-three young bullocks (four of which are home bred), one very good Shorthorn stock bull and about forty pigs of various ages.

The bullocks are generally bought ten or twelve at once in the autumn, most of them being two-year-olds. They run out on the pastures and are brought into the yards to finish for sale in the spring and summer. The cattle receive mangolds and cut chaff, with corn, bean meal, lentils, maize and linseed cake as concentrated feeding stuffs. They are fed three times a day—at 7 a.m., 11.30 a.m. and about 4.30 p.m.

About 100 sheep are bought early in July and sold early in November, receiving, while on the farm, cake, bran, and split beans. On such feeding they go out as "forward" stores.

Seven Large Black sows are kept and crossed with Large White boars. About 100 store pigs are fatted off each year, a few being bred and the remainder purchased at about eight weeks old. The rations consist of tail corn and purchased meal.

The poultry, which are under the care of Mrs. Turner, consist of White Leghorns, Sussex and Black Minorcas, with a flock of guinea-fowl and a few turkeys for Christmas feeding.

The stock were a very nice looking lot.

Five very useful cart-horses are kept and three young horses to take the place of the older ones when they are sold. They are bought in as yearlings or two-year-olds and sold at six or seven years old for town work.

Labour amounts to about 150*l.*, purchased manure about 35*l.*, cake about 140*l.*, corn and meal about 250*l.*, besides a large quantity of the home-grown corn being used. Turnips and corn are hoed piece-work at the rate of 4*s.* 6*d.* per acre.

Four men are regularly employed on the farm with one or two extra hands at busy times.

The tenant is not responsible for the upkeep of buildings, drainage, or gates.

This farm showed a very great improvement each time we visited it, the stock were all very good, both as regards quality and condition. All buildings have a very neat and tidy appearance. The corn crops are good, but the meadow hay crop very poor. On our first visit to this farm we saw some of the best ploughing being done that we have ever had the pleasure of seeing. The general management of the farm is excellent, showing close personal attention and business-like method.

FIRST PRIZE FARM IN CLASS IV.

Occupied by Mr. James Greengrass, of Malt House Farm, Stoke Holy Cross, Norwich.

This farm is held on a yearly tenancy under Messrs. M. and G. Birkbeck, of The Hall, Stoke Holy Cross, and consists of 82 acres, made up of 54 acres of arable and 28 acres of pasture land.

It is a light soil generally, with gravel subsoil on the high land and some chalk on the low land.

The arable land is generally worked on a four-course system, viz. :—

Wheat
|
Roots
|
Barley
|
Seeds.

As regards catch cropping, the hay stubble, immediately it is clear of hay, is scaled, and if for oats and the weather is wet, about 2 acres of turnips are drilled; if for wheat, and the weather is dry, about 4 acres of mustard are sown.

The clover ley is left down for one year only and is mown once, the second crop being either fed off or ploughed in according as to whether it is good in the root or not.

At the time of our visit there were 14½ acres wheat, 15½ acres clover, 7 acres mangolds, 2 acres cabbages, 2 acres

swedes, 11 acres barley, and 2 acres turnips. The clover was very good. The seed mixture consists of per acre : 8 lb. of red clover, 2 lb. of alsike, half a peck of "Pacey," and half a peck of Italian rye-grass. Farmyard manure is generally used on the clovers.

The land intended for green crops receives : swedes—7 tons farmyard manure, 2 cwt. of salt and 2 cwt. of turnip manure ; mangolds—8 tons farmyard manure and $3\frac{1}{2}$ cwt. of mangold manure, afterwards top-dressed with nitrate of soda and salt, equally mixed. "New Century" Yellow Globe is the variety generally grown, the seed being sown at the rate of 6 lb. per acre, on ridges 27 in. apart and singled out 14 in. in the rows. The land intended for wheat receives nitrate of soda in the spring, and that for barley, bone manure at the time of sowing, if necessary. The meadow land intended for mowing receives a dressing of 5 tons per acre of farmyard manure each year and was well done ; showing no rough sedge-grass or thistles on it. The pasture land is dressed with road scrapings and mould, and turnips, cabbages and mangolds are thrown out for stock whenever the weather is suitable.

The cattle at the time of our visit consisted of six cows, two heifers with first calves, four in-calf heifers, three empty heifers, five steers and five weanlings ; also five breeding sows and twenty-three store pigs. Ten of the cattle and twenty-five pigs were bred on the farm and the rest were purchased. The cows are fed with long hay and cotton cake, oatmeal and bran. The milk is used for making butter, which is marketed, the calves and pigs receiving the separated milk.

The cattle that are bought are purchased as calves about a fortnight old and fattened off to sell at eighteen months old. The calves are five months on milk, six months on grass and six months in boxes.

The cattle and pigs were a very nice looking lot, all showing signs of breeding and in a very healthy condition.

Two very useful cart-horses are kept, also one yearling and a foal, all of which were purchased.

Labour amounts approximately to 178*l.*; purchased manure, 19*l.* 3*s.*; cake, corn and meal, 210*l.* 8*s.* Mangolds are hoed piece-work at from 8*s.* to 10*s.* per acre, and corn at from 4*s.* to 6*s.* per acre. Four men and a boy are regularly employed on the farm.

The tenant is not responsible for the upkeep of buildings, drainage, or gates.

The stock on this farm were remarkably good, both as regards quality and condition. The homestead and all buildings were in a very neat and tidy state and carts and all implements good. The corn crops were good, the barley being one of the

best crops we saw. The general management was excellent, no money or trouble being spared to obtain good results and Mr. Greengrass is to be congratulated on the very business like manner in which he attends to the farm.

FIRST PRIZE FARM IN CLASS V.

Occupied by Mr. Stephen Warren, Walton Highway, Wisbech.

This farm comprises $23\frac{1}{2}$ acres of mixed fruit and $1\frac{1}{2}$ acres of pasture land, held under three landlords. The first holding consists of 8 acres of mixed fruit, held on a five years' lease under Mr. W. Ambrose, of Wisbech St. Mary; the second holding of $6\frac{1}{2}$ acres of mixed fruit and $1\frac{1}{2}$ acres of pasture land, held on a twelve years' lease under Mr. K. Leach, of Walton Highway, Wisbech; and the third of 9 acres of mixed fruit, held on a ten years' lease under Mr. J. W. Jewson, of Walton Highway, Wisbech.

Most of the soil is very heavy, with clay subsoil, but 8 acres are of a lighter, silty soil.

The varieties of plums grown are Victorias, Monarchs, Czars, and Damsons. Victorias do especially well on this farm.

The following varieties of apples are grown :—

Lane's Prince Albert.—Dessert and culinary. November to March. A first-rate market apple. Fruit large, round, smooth, yellow-green with red tint; acid and pleasant.

Worcester Pearmain.—Dessert. September to October. A good market sort, very prolific and hardy. Fruit medium, conical, yellow tinted with red; sweet and rich, especially in September.

Lord Grosvenor.—Culinary. August to September. An excellent variety, free and certain. Fruit large, conical, yellow; juicy and acid.

Grenadier.—Culinary. September to October. Good market apple. Fruit large, round, ribbed, deep yellow; acid and rich in flavour.

Bramley's Seedling.—Culinary. December to May. Fruit large, round, flattened at top, green tinged with red; acid; first-rate cooker.

Emneth Early, or Early Victoria and Lord Derby.

Mr. Warren considers Bramley's Seedling the best apple he grows.

The fruit trees on the first holding of 8 acres have been planted nine years, those on the second holding of $6\frac{1}{2}$ acres one year and those on the third holding four years, all the trees being about two years old when planted. Mr. Warren has found that fruit trees do best from seven to fifteen years old, as they bear well during that time and the fruit will keep an average size up to that age. Bramley's Seedling do best from

ten to twenty-five years old, as they are ten years old before they come into full bearing.

The first holding has been used as a fruit farm for nine years and has been in Mr. Warren's occupation for seven years; the second holding for one year. Mr. Warren having occupied it for three years, and the third for four years, the present holder having had it for five years. All the fruit trees were sprayed five times last season, three times with Herrod's apple-sucker wash and twice with Herrod's scab wash, though the scab wash was probably quite unnecessary, a dry season like the past summer being in itself the best preventive of scab and brown rot. Canker and "*die-back*" are the two diseases with which the trees are always troubled to some extent. Canker is cleaned out with a knife and die-back is checked by the ends of the branches being cut off an inch or two into the live wood. These complaints possibly arise through the land being badly underdrained, a very bad fault on fruit-growing land.

The gooseberry bushes are subject to red spider (*Bryobia prætiosa*), and American mildew. As soon as red spider is observed, the bushes are dressed twice with an emulsion of soft soap, soda and paraffin. The wood on the bushes suffering from American mildew is clipped off early in the season.

All the fruit trees are washed with lime and salt every three years and a large quantity of lime is used on the land. The soil of number three holding has just been analysed, and, although it received 15 tons of lime three years ago, it now needs a dressing of $1\frac{1}{2}$ tons of fresh slaked lime to the acre.

The strawberries are chiefly Paxtons, with a few Royal Sovereigns, Laxtons and Bedfordshire Champions. Paxtons are an old sort, but firm of flesh, of fine flavour and splendid for travelling. They do best on this land, and are, according to Mr. Warren, undoubtedly the finest strawberries grown to-day. Royal Sovereigns are an excellent all-round variety and Laxtons are considered by their raisers to be superior to Royal Sovereigns. All the fruit goes to Manchester to one salesman who generally buys the strawberries outright and occasionally the other fruit as well, if not, he sells it on commission on the usual terms. Mr. Warren finds it better to deal with one man only, as in this way he gets better terms for his fruit.

The labour bill amounts to 225*l.* and manures (including lime) to 31*l.* 10*s.* Mr. Warren informs us that he has had a very good year both with regard to yield and prices and he looks on the dry summer they had as a Godsend to fruit-growers.

SECOND PRIZE FARM IN CLASS III.

*Occupied by Mr. A. J. Christie, of Shys Farm, North Creake,
Fakenham*

This farm consists of 220 acres of arable and 25 acres of pasture land, held on a yearly tenancy under Earl Spencer, of Althorp House, Northampton. It is a light soil with chalk and marl subsoil and is worked on the following system —

Barley, Oats and Wheat

|
Roots

|
Barley and Oats

|
Seeds.

The seeds are down for one year only and are mown once. A few acres of peas are occasionally sown instead of all seeds.

The seeds mixture consists of 1 peck "Cole Ambrose" evergreen rye-grass, 1 peck red clover, white clover and trefoil, and sometimes a field of sainfoin.

The areas under the various crops were: turnips, 40 acres; mangolds, 6 acres; wheat, 22 acres; oats, 47 acres; barley, 52 acres; seeds, 49 acres; and pasture 25 acres.

The swede crop is manured with 3 cwt. of superphosphate and 2 cwt. of "manure salts" per acre; the mangold crop with twelve loads of farmyard manure and 1 cwt. of nitrate of soda mixed with 1 cwt. of salt applied after the plants are singled. The mangold crop consisted of "Cole Ambrose" Challenge Globe and "Messrs. Brown's" Yellow Globe, sown at the rate of 8 lb. per acre on ridges 25 in. apart, and singled out at 10 in. in the rows.

No permanent grass is ever mown and considerable quantities of roots are thrown out to the cattle, which also receive cake all the year round. The grass looked very well indeed considering the drought and had no nettles or thistles on it.

The cattle consisted of six cows, forty feeding beasts and twenty-five young cattle. There were also 300 hoggets (Suffolks and half-bred), and eight cart-horses, two two-year-olds, four foals, one driving horse and three young unbroken light horses.

The feeding cattle are fed on as many swedes as they can consume with cake and hay; the cows receive roots and cake, summer and winter.

Manures cost 70*l.* per annum, the labour amounts to 360*l.* and the cake bill last year was 310*l.*

Mr. Christie thought some time ago that his land was deficient in lime, as one field was very much given to finger-and-toe in the swedes. Analysis proved this to be the case and the field was dressed with 2 tons per acre of ground lime and Mr. Christie has not again been troubled with this disease. The rest of the farm was also dressed with ground lime at the rate of 10 cwt. per acre.

Two years ago 38 acres of this farm close to the homestead were taken for small holdings and replaced with 22 acres about a mile from the homestead.

The land is well managed and is in very good heart and clean. There was very keen competition in this class and the Judges considered Mr. Christie's farm a good second.

SECOND PRIZE FARM IN CLASS IV.

Occupied by Mr. Frederick Arthurton, of Elm Tree Farm, East Tuddenham, Dereham.

There are 74 acres of arable land and 23 acres of grass, held under a yearly tenancy from the Rt. Hon. Sir Ailwyn Fellowes, K.C.V.O. The tenant is not responsible for the upkeep of buildings or drainage. He is responsible for the fences and gates.

The system of cropping is barley and oats, undersown with seeds, followed by wheat, which comes into green crop.

The soil is mixed, with clay subsoil generally, though there are a few fields with gravel subsoil.

The areas under the various crops were:—

Barley	.	.	.	.	.	.	.	.	8	acres
Green Crops	.	.	.	.	.	.	.	.	28	"
Wheat	.	.	.	.	.	.	.	.	21	"
Clover	.	.	.	.	.	.	.	.	17	"

Meadow land for mowing is top-dressed with soil and refuse. The pastures are all fed.

The clover was very good indeed, but there was some rib-grass, &c., in the young clover. This crop is generally left down for one year and usually mown once, the second growth being fed off.

The land intended for green crops receives: mangolds, 12 tons farmyard manure and 5 cwt. fish salt. Golden Tankard is the variety generally grown, the seed being sown at the rate of about 7 lb. per acre on ridges 27 in. apart and singled out 14 in. in the rows. Swedes and white turnips receive 4 to 5 cwt. fish salt. The land intended for wheat 12 tons farmyard manure.

The stock consisted of four cows, four yearling heifers, four calves, fourteen bullocks, 123 hoggets, three breeding

sows, and twenty store pigs. Cows are seldom purchased, most of them being bred and reared on the farm. The bullocks are sold fat at two years old, being kept in the yards during the winter months. The milk is made into butter, the calves and young pigs receiving the separated milk. The hoggets are bought and generally kept about six months, receiving artificial food.

The horses consisted of five working horses and a yearling colt, all bred on the farm; in fact Mr. Arthurton has not purchased a horse for over twenty years.

The five horses receive 1 coomb of corn, beet and hay per week, and the cattle get cake, roots and hay.

The cattle were a very good lot indeed, as also were the horses.

Four men are regularly employed on the farm.

Roots are hoed piece-work at 10s. per acre and corn at 3s. per acre. Hedges are laid at 2s. per chain.

The labour bill amounts to 150*l.*, purchased foods to 150*l.* and manures to 12*l.* per annum.

SECOND PRIZE FARM IN CLASS V.

Occupied by Mr. F. Means, of Melbourne House, Hall Road, Outwell.

This farm comprises 33 acres, held on a yearly tenancy under Mr. W. A. Newling, of Boyce Bridge, Emneth. There are 1½ acres of top fruit (apples), 2½ acres of which are under planted with gooseberry bushes and raspberry canes.

The soil is a light one with a silt subsoil.

The following varieties of apples are grown:—

Annie Elizabeth.—Culinary. December to April. Good keeper. An excellent market apple. Fruit large, round and ribbed, yellow with a red tinge.

Stirling Castle.—Culinary. October to December. One of the best market apples. Fruit large, round, even, yellow with slight red tint; juicy and acid.

Mr. Gladstone.—Dessert. July to August. A useful early sort. Fruit medium, yellow with red streaks; juicy and agreeable. Must be eaten as soon as gathered.

Allington Pippin.—Dessert. November to February. Resembles Cox's Orange Pippin, but larger and softer in flesh. Flavour varying; best on warm soils.

Newton Wonder.—Culinary. November to May. An excellent late sort. Fruit large, round, even, yellow and red; acid and agreeable.

Emneth Early, Gold Medal, Lane's Prince Albert, Lord Derby, Bramley's Seedling and Worcester Pearmain.

There are also $4\frac{1}{2}$ acres of potatoes, $2\frac{1}{2}$ acres of carrots, $1\frac{1}{2}$ acres of mangolds, $1\frac{1}{2}$ acres of long-pod beans, $5\frac{1}{2}$ acres of barley, 3 acres of oats, $\frac{1}{2}$ acres of grazing pasture and 2 acres of mowing grass.

Fruit has been grown on the farm during the last five years, the trees being about eight years old. Mr. Means has had the land about ten years. The grass land intended for hay receives the clearing up of the stockyard and decayed vegetable matter of refuse off ploughed land. All root crops, except carrots, receive $\frac{1}{2}$ ton per acre special artificial potato manure, together with as much farmyard manure as can be made from the straw cropping. For straw crops neither artificial nor farmyard manure is required, in Mr. Means' opinion. The fruit trees have artificial manure and liquid manure from the cow-house.

The stock consisted of three cows, in-calf and in-milk, one heifer, one calf, ten store pigs, two working horses and one yearling cart filly. The horses are pastured during the summer months. In winter they receive chop with meal and carrots.

The cows are pastured during the summer months and receive 7 lb. cotton cake each per day. In the winter they have hay, cut chop and pulped mangolds, with 9 lb. cotton cake per day during the milking period. The pigs are grown on until time for fattening with milk and wash from the house and are afterwards fattened with meal.

Mr. Means generally sells his fruit at home and informs us that he has had a satisfactory year both as regards yield and prices.

Everything on this farm was well done and there was no waste of any sort. The house and dairy were very clean and everything was in good order. The Judges considered the first prize farm in this class and Mr. Means' farm the closest thing they had to judge.

JAMES BAINBRIDGE.

Walton House,
Warrington.

We subscribe to the foregoing Report—

BERNARD CASSWELL,
W. W. WEST.

REPORT OF THE COUNCIL TO THE
ANNUAL GENERAL MEETING OF GOVERNORS
AND MEMBERS OF THE SOCIETY,
HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON, N.;
On WEDNESDAY, December 6, 1911, at 3 p.m.

THE RIGHT HON. SIR AILWYN E. FELLOWES, K.C.V.O.
(Acting-President) in the Chair.

THE COUNCIL, in presenting their Annual Report, desire to place on record the following letter addressed to the Acting-President by the President, His Majesty the King, at the commencement of His Majesty's year of office:—

Windsor Castle, *January 23rd, 1911.*

MY DEAR FELLOWES,

It is a matter of sincere gratification to me that the third occasion of my occupying the position of President of the Royal Agricultural Society should be when its visit is to the county of Norfolk, where I have for so many years made my home, and in the agricultural development of which I shall always take the keenest interest.

I learn with much pleasure of the prosperous condition enjoyed by the Society to-day, and of its increased activity in all matters generally affecting the welfare of agriculture.

Much of the good results upon which the Society can rightly congratulate itself is due to the untiring work and personal influence of our Honorary Director, Sir Gilbert Greenall.

I am delighted to hear that there has been an addition of upwards of 200 members from the county of Norfolk, and I trust that this example may prove an incentive to other counties to increase their membership of this great Society.

I know that you and your colleagues are making every effort to secure the highest possible standard of excellence, both in exhibits and as regards the general arrangements of the Show-yard at Norwich, and I feel certain that, given fine weather, we shall be able to record an eminently successful Show.

I understand that many of the Ministers of Agriculture from my Oversea Dominions have been invited to attend the Show. I trust that, at all events, it may be possible for some of them to be present, and that they will derive both pleasure and experience from their inspection of the varied and comprehensive exhibits of live stock, implements, and produce of this country, which will be brought together in the Showyard.

I greatly appreciate your kindness in discharging the duties of President of the Society on my behalf during this year.

Believe me, very sincerely yours,

GEORGE, R.I.

1. The Council have to report that the list of Governors and Members has undergone the following changes during the year which has elapsed since the Annual General Meeting on December 7th, 1910; 8 new Governors, and 908 new Members have joined the Society, and 3 Members have been re-instated under By-law 14; whilst the deaths of 5 Life Governors, 3 Governors, 109 Life Members, and 101 Annual Members have been reported. A total of 54 Members have been struck off the books under By-law 12, owing to absence of addresses, 67 Members under By-law 13, for arrears of subscription; and 2 Governors and 206 Annual Members have resigned.

2. The losses by death sustained by the Society during the current year include three Governors who had all served on the Council. Earl Cawdor joined the Society in the year 1863, became a Member of the Council in 1882, and was elected a Trustee in 1900, which office he retained until his death early in the present year. As Viscount Emlyn, his Lordship was for many years Chairman of the Chemical and Woburn Committee, and in 1901, when the Show was held at Cardiff, he occupied the Presidential Chair. Mr. Reginald A. Warren, whose death, at the age of 91, occurred recently, became a member in 1857. In the year 1878 he was elected a Member of the Chemical Committee, though he did not actually become a Councillor until 1882. In this office he continued until 1905, when, owing to advancing age, he decided not to seek re-election. Mr. Warren's services will be recalled by his old colleagues more particularly in connection with the Society's Experimental Farm at Woburn. More recently has been announced the death of the Earl of Onslow, who was a Member of Council from 1905 to 1907. His Lordship had held many important posts in the Empire, but will probably best be remembered by Members of the Society as President of the Board of Agriculture from 1903 to 1905.

3. Amongst other Governors and Members whose loss by death, since the last Annual Meeting, the Society has to deplore, are the Earl of Ancaster (Gov.), the Earl of Cranbrook, the Earl of St. Germans, Viscount Bangor, Lord Airedale, Lord Bellow, Lord Dynevor, Lord Rendlesham, Lord Winterstoke, Lord Wrottesley, the Right Hon. Sir J. E. Dorington, Bart., the Hon. G. E. Lascelles, the Hon. E. W. R. Portman, the Hon. Percy Wyndham, Sir Walter O. Corbet, Bart., Sir Charles Elliot, Bart. (Gov.), Sir William Foster, Bart., Sir H. H. Langham, Bart., Sir John Lawson, Bart., Sir Theophilus Peel, Bart., Sir W. L. S. Stucley, Bart., Sir William Birt, Sir William James Farrer, Sir Francis Galton, F.R.S., Sir Cuthbert Quilter, Bart., Sir Henry Hall Scott, Mr. Herbert John Allcroft (Gov.), Mr. Albert Armitage, Mr. W. J. Beart, M.R.C.V.S., Mr. William Bennison, Mr. Henry Broadhurst, Mr. Edward Henry Brown, Lieut.-Col. J. C. Fife Cookson, Mr. Arthur Carey, Mr. C. J. Drewitt, Mr. William H. Dunn (1864), Mr. J. P. Fison (1855), Mr. James A. Gordon, Mr. Louis Grandeau (Paris), Col. G. Smith Grant, Mr. John James Griffiths (Gov.), Mr. W. H. Hodgkin (California), Mr. Hugh Robert Hughes (1853), Surgeon Lieut.-Col. John Ince, M.D., Mr. John Jekyll, Mr. W. E. King King, Mr. Charles Lambert (1853), Col. C. P. Le Cornu (1862), Mr. Jonathan

Middleton (Glastullich), Mr. Andrew Mitchell (Barchoskie), Mr. S. E. B. Bouverie Pusey (1861), Mr. William Richardson (Doddington), Mr. E. P. Squarey (Gov.), Mr. C. L. Sutherland, C.I.E., Capt. H. D. Terry, Mr. John Treadwell (1862), Mr. W. R. Trotter, Mr. W. P. Vosper, and Mr. Barnes Wimbush (1854).

4. At their meeting in the Showyard at Norwich, the Council transferred to the list of Life Governors Mr. Robert Fellowes, of Shotesham, who had been a Member for the long period of sixty-one years, during which time he had paid the annual subscription. Mr. Robert Fellowes, who is ninety-five years of age, was present at the Show this year.

5. The above, and other changes, bring the total number of Governors and Members now on the Register to 10,306 divided as follows:—

- 1 Foundation Life Governor (Mr. W. Barrow Simonds);
- 168 Annual Governors;
- 85 Life Governors;
- 7,224 Annual Members;
- 2,797 Life Members;
- 31 Honorary Members;

10,306 Total number of Governors and Members, as against a total of 9,934 Members on the Register at the time of the last Annual Report.

6. The number of Governors and Members on the Register, as shown in the preceding paragraph, is now well over ten thousand. This desirable state of things has, in a large measure, been brought about by the Society's most popular and hardworking Acting-President, Sir Ailwyn Fellowes, who, mainly by his own exertions, has been successful in raising the Membership in his own County of Norfolk from 330 to 720.

7. The Earl of Northbrook has been elected a Trustee in the room of the late Earl Cawdor, and Mr. R. M. Greaves has been appointed a Vice-President. A vacancy thus created in the representation of North Wales on the Council has been filled by the election of Mr. Arthur E. Evans, of Bronwylfa, Wrexham.

8. The Members of Council who retire by rotation at the next General Meeting are those representing the Electoral Districts of Group "A." The necessary steps are being taken for the election or re-election of Representatives for the various Divisions concerned. Norfolk, by virtue of the large accession of Members in that District during the year, is now entitled to four Representatives instead of two.

9. A suggestion made at the last Annual Meeting by Sir Herbert Chermiside has been adopted this year, as the result of which every Member in the Divisions of Group "A" has had sent him, with the circular letter announcing the election, a list of the Governors and Members in his particular County or Electoral District. The Council hope that the circulation of such

lists from time to time may be of assistance to Members, and that they will not only make use of them on the occasion of the election of Council, but also in conjunction with their efforts to maintain, and, if possible, increase the roll of Membership in their own Districts.

10. During the year two of the oldest Members of the Council have attained the age of four-score years, H.R.H. Prince Christian of Schleswig-Holstein, and Sir Walter Gilbey, Bart. An address of congratulation on the happy event was sent by this Council to Prince Christian, and a letter conveying the Council's expressions of gratification was forwarded to Sir Walter Gilbey.

11. Slight alterations in the wording of By-laws 6, 7 and 8, relating to Life Compositions, have been sanctioned by the Council, and, in order to comply with the requirements of By-law 56, the fact is now communicated to the general body of Governors and Members. The amendments referred to are of a merely verbal character, and are rendered necessary by the effluxion of time.

12. Lord Middleton having expressed his willingness to allow himself to be nominated as President of the Society for the year 1912, it has been unanimously decided by the Council to recommend the election of his Lordship to that office at the Annual Meeting.

13. Under the By-laws, the balance-sheet has to be presented for consideration at the Annual General Meeting. The Council therefore beg to submit the balance-sheet for the year 1910, with the Statement of Ordinary Income and Expenditure. These accounts were published in Volume 71 of the Journal issued to Members early this year, having been duly examined and certified as correct by the Auditors appointed by the Members, and by the professional Accountants employed by the Society.

14. The Council have considered the question of providing a scheme for the superannuation of their official staff, and have made satisfactory arrangements for carrying their proposals into effect.

15. A suggestion made by Mr. Adeane that the Officers of the Society should be asked to deliver Lectures at the Society's house was approved by the Council in February last. The first of these lectures was delivered by Professor Biffen, the Society's Botanist, on the 4th April, the subject being "The Principles of Breeding as illustrated by Wheat."

16. The Seventy-second Annual Show was held under the Presidency of His Majesty the King at Norwich from the 26th to the 30th June, the week following the Coronation of His Majesty, and, as befitted such an auspicious occasion, the Show, in almost every way, was of more than usual excellence. Fine weather prevailed throughout the five days, and the total attendance reached 121,465, 75,266 persons paying for admission on the

Thursday, the first shilling day. At the close of the first day, the Acting President telegraphed a report of the day's doings to the King, and at the General Meeting next day, the following telegram from His Majesty was read to the Governors and Members —

To Ailwyn Fellowes,

Royal Agricultural Show, Norwich

I am delighted to hear that the Royal Agricultural Show has been opened under such favourable auspices, and that the hope expressed in my letter to you of January 20rd that we shall be able to record an eminently successful Show has been realised. Please convey to the Governors and Members at the General Meeting my sincere appreciation of all they have done to bring about this result. I much look forward to visiting the Show to-morrow, and to thanking you personally for the very efficient manner you have discharged the duties of President of the Society on my behalf.

(Signed)

'GEORGE, R.I.'

17. His Majesty himself honoured the Show with his presence on the Wednesday, the second Half-crown day, and evinced the liveliest interest in all sections of the great exhibition. The Royal visit was made the occasion for conferring a knighthood on the Lord Mayor of Norwich (Sir Eustace Gurney). His Majesty also presented the Acting-President of the Society with the insignia of a Knight Commander of the Victorian Order, and the Honorary Director (Sir Gilbert Greenall, Bart.), with that of a Commander of the Victorian Order.

18. The Ministers of Agriculture of several of the Overseas Dominions attended the Show, as also did a party of Members of Parliament from the Dominions who were the guests in this country of the Lords and Commons Committee Visitors, indeed came from all quarters of the British Empire, and from many other parts of the world. The Show was visited by a party of Members of the Netherlands Agricultural Society, who afterwards made a tour of typical farms and breeding establishments in Norfolk, Suffolk and Cambridgeshire. The party were much interested in all they saw, and a letter was subsequently received by the Secretary expressing the thanks of the Dutch Society for the facilities extended to their Members in connection with the Show, and the assistance given them in arranging their excursion.

19. The third visit to Norwich was characterised by the same cordial reception accorded to the Society on the two previous occasions by the City and County. The Local Committee spared no pains to make every preparation for the reception of the Society and for the success of the Show. The Lord Mayor showed himself to be most anxious that nothing should be left undone to make the Show successful, and in this he was following in the footsteps of his father, the late Mr. Gurney, who was Mayor of Norwich on the occasion of the Society's previous visit in 1886. By the kindness of Mr. Russell Colman, the Show

was, for the second time, held at Crown Point, and the charming situation added greatly to the pleasure of visitors to the Show. The railway arrangements, which were this year in the hands of one Company, were admirably carried out by the Great Eastern Railway Company, who, in addition to laying down several miles of Sidings, erected Temporary Bridges over the Main Line and the River Yare, and constructed the necessary Roads for foot passengers and also for the transport of Exhibits from the Sidings to the Showyard.

20. The Accounts in connection with the Norwich Show will be handed to Members at the Annual Meeting, but it may here be stated that, subject to audit, these accounts show a deficit of £532.

21. The trials of Potato Diggers and Sorters were conducted, on the 26th and 27th September last, on land belonging to Messrs. William Dennis & Sons, Ltd., at Littleworth, near Spalding, and were attended on both days by a large number of persons interested in Potato growing from all over the Kingdom. In the class for Diggers thirteen machines were tried, the First Prize of £20 being awarded to Martin's Cultivator Company, Ltd., of Stamford, and the Second Prize of £10 to Messrs. Blackstone & Co., Ltd., of Stamford. In the Class for Sorters, six machines competed, the First Prize of £10 going to Messrs. Cooch & Son, Northampton, and the Second Prize of £5 to Mr. Walter Ness, of Kings Kettle, Fifeshire. The Official Report of the Judges is now in preparation.

22. A Competition for Plans of House and Buildings for a Farm of not exceeding 50 acres has been carried out by the Society, and the designs of the successful competitors were exhibited at the Norwich Show. The Judges' Report, with reproductions of the Prize Designs, was also on sale at the Show. The price of the Report to Members is Sixpence.

23. The Show of next year will take place on the Town Moor, at Doncaster, from Tuesday, July 2nd, to Saturday, July 6th. Following the usual practice adopted by the County organisations when the Royal Agricultural Society pays a visit to their district, the Yorkshire Agricultural Society have agreed not to hold their own Show in 1912.

24. The Schedule of Prizes for Live Stock, Poultry, Produce, &c., at the Doncaster Show, which will be issued early in the New Year, will be on a very liberal and comprehensive scale. The Doncaster Local Committee have promised a handsome contribution towards the Prizes, and offers of Champion and other Prizes have been received from the following Breed Societies:—Shire Horse Society, Clydesdale Horse Society, Hunters' Improvement Society, Cleveland Bay Horse Society, Polo and Riding Pony Society, Welsh Pony and Cob Society, Shorthorn Society, Lincolnshire Red Shorthorn Association, Hereford Herd Book Society, South Devon Herd Book Society, Longhorn Cattle Society, Sussex Herd Book Society, Welsh

Black Cattle Society, Aberdeen-Angus Cattle Society, English Abordeen-Angus Cattle Association, Galloway Cattle Society, Ayrshire Cattle Herd Book Society, Dorsetshire Sheep Breeders' Association, Southdown Sheep Society, Hampshire Down Sheep Breeders' Association, Suffolk Sheep Society, Dorset Sheep Breeders' Association, Dorset Horn Sheep Breeders' Association, Ryeland Flock Book Society, Lincoln Long-Wool Sheep Breeders' Association, Leicester Sheep Breeders' Association, Society of Border Leicester Sheep Breeders, Cotswold Sheep Society, Exmoor Horn Sheep Breeders Association, and Lincolnshire Curly Coated Pig Breeders' Association. Six Gold Challenge Cups, value 50 guineas each, are offered (1) for the best Hack and Riding Pony; (2) for the best Harness Horse in the Novice Classes; (3) for the best Single Harness Horse; (4) for the best pair of Harness Horses; (5) for the best Tandem; (6) for the best Four-in-Hand. The following Cups are also offered:—Fifty-Guinea Cup for the best group of one Shorthorn Bull and two Cows or Heifers in the Dairy Shorthorn Classes; £20 Cup for the best animal in the South Devon Cattle Classes; Twenty-five-Guinea Silver Cup for the best animal in the Kerry Classes; Twenty-five-Guinea Silver Cup for the best animal in the Dexter Classes; Fifty-Guinea Silver Bowl for the best group of one Ram and three Ewes in the Lincoln Sheep Classes; Sixty-Guinea Silver Cup for the best Border Leicester Ram or Ewe; Twenty-five-Guinea Silver Cup for the best Sow in the Large Black Pig Classes.

25. The following Classes and Prizes, amounting to £485, are offered by the Doncaster Local Committee for the best-managed Farms in Yorkshire:

Class I.—FARM, chiefly Arable, of 200 acres or over, exclusive of Fell or Tidal Marsh Land. First Prize, £100; Second Prize, £50

Class II.—FARM, chiefly Arable, of not less than 50 acres and under 200 acres, exclusive of Fell or Tidal Marsh Land. First Prize, £50; Second Prize, £25.

Class III.—STOCK OR DAIRY FARM, of 200 acres or over, exclusive of Fell or Tidal Marsh Land. First Prize, £100; Second Prize, £50.

Class IV.—STOCK OR DAIRY FARM of not less than 50 acres and under 200 acres, exclusive of Fell or Tidal Marsh Land. First Prize, £50; Second Prize, £25.

Class V.—FARM, chiefly Arable, of not less than 10 acres and under 50 acres. First Prize, £20; Second Prize, £10; Third Prize, £5.

The Entries closed on Wednesday, the 15th November.

26. A Trial of Seed Drills will be carried out by the Society next year, and the Council have now under consideration the Regulations for such Trial.

27. As stated in last year's Report, the Annual Show of 1913 will take place on the Durdham Downs, at Bristol. The Show in the following year, 1914, will be held at Shrewsbury.

28. There has been a slight falling-off in the number of samples submitted by Members of the Society for analysis, the total for the twelve months being 434, as against 469 in 1910. In addition, 43 samples of cider and 226 of milk were analysed in connection with the Norwich Show. An important matter brought to light, and which subsequently formed the subject

of more than one prosecution under the Fertilisers and Feeding Stuffs Act, was the sale of "Cod liver oil condition mixture," in which rice husks or "shudes" figured largely. In connection with the Lords' Committee on the Sales for Agricultural Purposes Bill, evidence was given, on behalf of the Society, by the Consulting Chemist.

29. The exceptional season of 1911 told very severely on the light land of the Woburn Farm, but, despite the prolonged drought, the different experiments were carried through, and their continuity left unbroken. Wheat was a good crop, but both barley and oats suffered on the light land. The root crops were better than might well have been expected, and quite fair crops of sugar-beet and of mangolds were grown. Also an interesting series of experiments on different varieties of Lucerne was commenced. The cattle yard has been covered in, and will provide excellent accommodation for the winter feeding of cattle, and for experiments in feeding. At the Pot-culture Station work has been continued upon lithium and zinc salts, as also on the relation of lime and magnesia in soils. New work was started in connection with the heating of soils and their treatment with different antiseptic agents. An exhibit from the Society's Farm and Pot-culture Station was sent to the Norwich Show in June, and another was prepared for the International Exhibition at Turin, which has been awarded a "Grand Prix" Diploma.

30. In the course of the year 1910-11 the enquiries received and dealt with by the Botanical Department were, in round numbers, as follows:—Seed Testing, 180 complete analyses, and about 200 rough analyses for purity of sample or comparison of sample with bulk; Weed Identifications, 36; Fungoid Diseases of Plants, including crops, forest trees, and garden plants, 30; General Enquiries, dealing for the most part with the formation of pastures or their renovation, 40; Poisoning of Stock, 3. A detailed Report on the results of the Seed Testing is in preparation. Its chief feature of interest is the number of cases dealt with where good seeds failed or germinated irregularly on account of the dry condition of the seed beds. The Fungoid Diseases include one or two of some general interest, such as "Crown Gall," which will be described in full in a subsequent report.

Investigations are now in progress on (a) the Weed Flora of certain of the Woburn plots: (b) the Micro Flora of some of the manurial plots at Woburn: (c) the improvement of Lucerne.

31. All through the summer numerous complaints were received of various Insect Pests, but they were usually of minor importance, owing probably to the fact that there was sufficient explanation of the failure of certain crops in the unusual and prolonged drought, and more or less insect attack made little difference. Various species of *Aphis* were especially active, and many of the common pests were favoured by the inability of crops to grow away from them. Some interesting cases of insects injuring forest trees were investigated, and some further progress was made in clearing up the life-history of the Raspberry Beetle and other injurious insects. Many specimens were sent for identification.

32. The Board of Agriculture returns relating to anthrax for the year may be regarded as favourable on the whole, as they show a reduced number of outbreaks compared with recent years. The figures, however, are not exactly comparable, as since the beginning of the current year the returns include only outbreaks in which the diagnosis has been verified by microscopic examination. The returns with regard to glanders are very satisfactory, the reported outbreaks being nearly 50 per cent. less than those of last year, during which there was also a marked decline as compared with the preceding year. This very gratifying result must be ascribed to the operation of the Glanders Order which came into force on the 1st January, 1903, and which, for the first time, gave local authorities the power to prevent the movement of all suspected horses until they had been proved free from glanders by the mallein test. Sheep scab has prevailed to about the same extent as in recent years. Since the beginning of the year there has been an alarming increase in the number of outbreaks of swine fever, the reported outbreaks being nearly twice as numerous as during the past year. Renewed anxiety has been caused to stockowners during the year by the occurrence of outbreaks of foot-and-mouth disease in different parts of the country. Since the 1st of January last there have been no fewer than five independent outbreaks. These occurred respectively in the counties of Surrey, Middlesex, Sussex, Derby, and Somerset. These five outbreaks appeared to be all independent of one another, but in four instances the disease extended to adjacent premises before it was finally stamped out. It is fortunate that the very prompt and energetic action taken by the Board of Agriculture speedily served to stamp out the whole of these outbreaks. Although there is no room for doubt that the outbreaks must have been caused by the introduction of contagion from the continent of Europe, the exact means by which this was effected has not been traced in any case.

33. It is satisfactory to learn that the President of the Board of Agriculture and Fisheries has appointed a Departmental Committee to enquire into the question of foot-and-mouth disease in this country, and that the Right Hon. Sir Ailwyn Ffellowes has consented to act as Chairman of the Committee.

34. The Council, at their last meeting, passed a resolution in the following terms, a copy of which has been forwarded to the Board of Agriculture:—

That this Council respectfully press the Board of Agriculture to bring into operation the Tuberculosis Order of May 27th, 1900, the compensation to be provided either out of the Development Fund or from other Imperial sources, and not from local rates.

35. Since the beginning of the year considerable progress has been made with the experiments which are being carried out at Woburn for the purpose of demonstrating that by means of isolation it is possible to rear healthy stock from tuberculous parents. It is hoped that the full complement of calves originally contemplated will have been obtained within the next few months.

36. As the result of the examination at the Royal Veterinary College for the Society's Medals for proficiency in Cattle Pathology, including the diseases of Cattle, Sheep and Pigs, the

Silver Medal has been awarded to Mr. J. T. Edwards, Green Villa, Ashburnham Road, Pembrey, Carmarthen, and the Bronze Medal to Mr. G. F. Steevenson, Rockmount, Torrington.

37. The Council have decided to offer the Society's Gold Medal annually for original research in Agriculture, subject to the following regulations:—

1. The Medal shall be called the Royal Agricultural Society of England's Research Medal.
2. The Medal shall be awarded for a monograph or essay giving evidence of original research on any agricultural subject or any of the cognate agricultural sciences.
3. Candidates for the Medal must reside in Great Britain or Ireland, and must not be either over the age of twenty-seven years or of more than five years' standing from the time of taking their first agricultural qualification, such qualification being (a) a Degree or Diploma of a University or University College, or (b) the National Diploma in Agriculture.
4. The Medal shall be adjudged by Referees appointed by the Council of the Royal Agricultural Society. The Referees shall have power to award in the place of the Gold Medal a Bronze Medal and Books, together of equivalent value to the Gold Medal, if the successful candidate so desires.
5. The monograph or essay shall be forwarded to the Secretary of the Royal Agricultural Society on or before Michaelmas Day. The monograph or essay shall be typewritten or printed.
6. If in the opinion of the Referees no monograph or essay be found to attain a sufficient standard of excellence, they shall be at liberty to reserve the medal of that year for award as an additional medal in some subsequent year.
7. The monograph or essay of the successful candidate shall be published in the Journal of the Royal Agricultural Society, if, in the opinion of the Council, it is suitable for that purpose.

The award of the Gold Medal will carry with it Life Membership of the Royal Agricultural Society.

38. The Trustees of the "Queen Victoria Gifts" Fund have made a grant to the Royal Agricultural Benevolent Institution of £140 for the year 1911, to be distributed in grants of £10 each to the five male candidates, five married couples, and four female candidates, who polled the largest number of votes in their class, and who would not this year receive grants from any other fund in connection with the Royal Agricultural Benevolent Institution.

39. The Twelfth Annual Examination for the National Diploma in Agriculture was held at the Leeds University from the 21st to the 27th April last, when 29 candidates were successful in obtaining the Diploma, the first 5 gaining Honours. For list of successful candidates see pp. 339 and 340.

40. In the Regulations and Syllabus of the Examination in Agriculture in 1912 a number of alterations have been introduced. The National Agricultural Examination Board are of opinion that the time has arrived when they might discontinue the practice of examining in Elementary Science, and the subjects of examination will in future be:—Practical Agriculture (two

papers), Farm and Estate Engineering (including Surveying, Buildings, Machinery and Implements), Agricultural Chemistry, Agricultural Botany, Agricultural Book-keeping, Agricultural Zoology and Veterinary Science. Candidates will have the option of taking the whole eight papers in one year, or of sitting for a group of any four in one year, and the remaining group of four in the next year. In order to be eligible to sit for the new examination, a candidate must present a certificate from a recognised Agricultural College that his attainments in the subjects of General Botany, General Chemistry, Geology, and Physics and Mechanics, as attested by class and other examinations are, in the opinion of the authorities of the College, such as to justify his admission to the examination. If unable to present a certificate from an Agricultural College, a candidate will have the choice of several alternatives.

To meet the case of students who had already commenced their courses of training before the issue of the new Regulations, the Board have decided to hold Examinations in the old Part I. in 1912 and in Part II. in 1912 and 1913, as well as under the new conditions.

41. The Examinations for the National Diploma in Dairying were held this year for English students from September 16th to 22nd, at the British Dairy Institute and University College, Reading; and for Scottish students from September 23rd to 30th, at the Dairy School for Scotland, Kilmarnock. Thirty-three candidates were examined at Reading, of whom fifteen passed, and forty-two candidates at Kilmarnock, of whom twenty passed. The names of the successful candidates will be found on pp. 343 and 344.

42. The Text-book "Elements of Agriculture," edited by the late Dr. Fream, having passed through no less than seven editions, and met with so great a demand by the public that 39,000 copies have been sold since its issue in 1892, the Council thought the time had arrived for a thorough revision and partial re-writing of the book. This duty was undertaken for the Society by Professor Ainsworth-Davis, M.A., Principal of the Royal Agricultural College, Cirencester, with the assistance of the Society's Consulting Officers, the Secretaries of the principal Breed Societies, and others; and the new edition, which is greatly enlarged and contains a number of new illustrations, has just been published by Mr. John Murray, 50A, Albemarle Street, W., at the price of five shillings.

By Order of the Council,

THOMAS McROW,

Secretary.

16, BEDFORD SQUARE,
LONDON, W.C.

November, 1911.

NATIONAL AGRICULTURAL EXAMINATION BOARD.

1.—REPORT ON THE RESULTS OF THE TWELFTH EXAMINATION FOR THE NATIONAL DIPLOMA IN AGRICULTURE,

HELD AT LEEDS, APRIL 24 TO 27, 1911.

1. THE Committee of the National Agricultural Examination Board entrusted with the conduct of the Twelfth Annual Examination for the NATIONAL DIPLOMA IN AGRICULTURE report that, by the courtesy of the authorities, the Examination was again held at the Leeds University, from April 24 to 27, 1911. In all, 97 candidates entered, 52 in Part I., and 45 in Part II. Of the candidates who entered this year for Part II.—which comprises the subjects of Practical Agriculture, Agricultural Book-keeping (*or Mensuration and Land-Surveying*), Agricultural Chemistry, Agricultural Engineering, and Veterinary Science—eight, who had previously failed in one subject of Part I., were allowed to take that subject *in conjunction* with the Second Part; and eleven, who had on a former occasion failed in only one subject of Part II., came up for that subject *alone*.

2. The result of the Examination in Part II. was that 29 candidates (including two of the eight who were also taking a Part I. subject, and the whole eleven who came up for one subject only) were successful, and, having now passed both Parts of the Examination, are entitled to receive the National Diploma in Agriculture, the first five candidates gaining Honours.

Diploma with Honours.

1. FREDERICK KEITH JACKSON, Leeds University.
2. THOMAS HAMILTON, Leeds University.
3. GEORGE CHRISTOPHER MARTIN, Leeds University.
4. E. ERNEST W. PAYNTER, Leeds University.
5. GORDON BURDASS YOUNG, Harper-Adams Agricultural College, Newport, Salop.

The names of the Diploma winners, in alphabetical order, are as follows :—

Diploma.

- ONNIG J. BALABANIAN, West of Scotland Agricultural College, Glasgow.
 WILLIAM JAMES BERRY, College of Agriculture and Horticulture, Holmes Chapel, Cheshire.
 BENJAMIN BUNTING, College of Agriculture and Horticulture, Holmes Chapel, Cheshire.
 THOMAS ELSLEY CARTER, Midland Agricultural and Dairy College, Kingston, Derby.
 FRANK EWART 'ORRIE, West of Scotland Agricultural College, Glasgow.

AUSTIN EASTWOOD, Harris Institute, Preston.
 WILLOUGHBY VICTOR FOOT, University College, Reading.
 JAMES SIMPSON GREEN, Aberdeen and North of Scotland College of Agriculture, Aberdeen.
 ROBERT HALL, Harris Institute, Preston.
 JOHN JENNINGS, Royal College of Science, Dublin.
 MATTHEW RANKIN JOHNSTON, Midland Agricultural and Dairy College, Kingston, Derby.
 ARTHUR REGINALD LAMBERT, Harper-Adams Agricultural College, Newport, Salop.
 PATRICK WILLIAM MACKENZIE, Aberdeen and North of Scotland College of Agriculture, Aberdeen.
 GEORGE NORMAN MAURICE MORRELL, Leeds University.
 ROBERT PARK, Harris Institute, Preston.
 JOHN SAMUEL POWNALL, Midland Agricultural and Dairy College, Kingston, Derby.
 ALFRED ERNEST ROBERTS, Harris Institute, Preston.
 JONATHAN ALAN ROBOTHAM, Harper-Adams Agricultural College, Newport, Salop.
 JOHN PERCY THOMPSON, Harris Institute, Preston.
 HERBERT WIGNALL, Harris Institute, Preston.
 DENNIS WILLIAM WOOD, Harper-Adams Agricultural College, Newport, Salop.
 JAMES HERBERT WOOD, Leeds University.
 WILLIAM AIREY YATES, Harris Institute, Preston.
 JOHN McDONALD YOUNG, West of Scotland Agricultural College, Glasgow.

3. Of the 52 candidates who entered for Part I.—which comprises the subjects of Agricultural Botany, Mensuration and Land Surveying (*or Agricultural Book-keeping*), General Chemistry, Geology, and Agricultural Zoology—three had failed on a previous occasion, and 49 entered for the first time. As the result of the Examination in Part I., 28 candidates, including one who had failed on a former occasion, succeeded in passing in all the subjects, and are thus entitled to sit for Part II. of the Examination next year. The remaining 24 failed—four in one subject only.

4. The following are the names of the successful candidates in Part I., placed in alphabetical order:—

THOMAS WILLS ARNETT, Truro Technical Schools, Cornwall.
 WILLIAM JAMES BORLASE, Truro Technical Schools, Cornwall.
 DOUGLAS JACKSON BOYLE, Leeds University.
 HAROLD BRADSHAW, Harris Institute, Preston.
 VICTOR CHARLES FISHWICK, The Agricultural Institute, Ridgmont, Beds.
 GUY RHODES HAIGH, Leeds University.
 ROBERT HART, University College, Reading.
 RONALD ISLA HARVEY, West of Scotland Agricultural College, Glasgow.
 ERNEST HULL, Harris Institute, Preston.
 SAMUEL ALEXANDER KILPATRICK, West of Scotland Agricultural College, Glasgow.
 JAMES KIRKWOOD, West of Scotland Agricultural College, Glasgow.
 JOHN KIRKWOOD, West of Scotland Agricultural College, Glasgow.
 ROWLAND WHITELAW LITTLEWOOD, Leeds University.
 ANDREW CORRIE MCCANDLEISH, West of Scotland Agricultural College, Glasgow.
 JAMES FITZGERALD MALCOLM, West of Scotland Agricultural College, Glasgow.
 JOHN MALCOLM, West of Scotland Agricultural College, Glasgow.
 MAURICE MALCOLM, West of Scotland Agricultural College, Glasgow.
 EDWARD PERCIVAL, Harris Institute, Preston.
 JOSEPH HENRY PRATER, Truro Technical Schools, Cornwall.
 FRANK RAYNS, Midland Agricultural and Dairy College, Kingston, Derby.
 ARNOLD ROBBUCK, Leeds University.
 GEOFFREY BELAYSSE SMITH, Leeds University.

GEOFFREY TALBOT, Harris Institute, Preston.
HENRY WILBERFORCE THOMPSON, Leeds University.
ALEC DAVID ROBERT WALBANK, Leeds University.
ROBERT H. F. WALLING, Armstrong College, Newcastle-on-Tyne.
ARTHUR RICHARD WESTROP, Harper-Adams Agricultural College, Newport, Salop.
HUGH ALEXANDER WYLLIE, West of Scotland Agricultural College, Glasgow.

5. The Reports of the Examiners in the five subjects included in Part I. are as follows:—

1. AGRICULTURAL BOTANY. (200 Marks.)

Professor John Percival, M.A., F.L.S.

The average standard of attainment in the subject was maintained this year, but there was an absence of really well trained candidates. The more elementary parts of the syllabus had been well prepared in most instances, but a number of those examined showed only a slight practical acquaintance with the botany of farm crops and fungi. More attention should be given to the botanical features of the chief root and fodder crops and the finer details of grasses. It would be well if all students of this subject could see small plots or ears and grain of the chief varieties of wheat, barley, oats and rye.

2. MENSURATION AND LAND SURVEYING. (200 Marks.)

Mr. R. E. C. Burder, P.A.S.I.

The candidates in this examination seemed to experience little difficulty in drawing the plans and sections, although, at the same time, more attention might well have been devoted to neatness and finish in the execution of the work. In the mathematical questions the chief fault appeared to be that too little care was taken to select the shortest and safest methods of working. In the *visual* examination the candidates showed that they possessed a very fair knowledge of the signs and symbols employed upon the Ordnance Maps, and seemed to have appreciated the necessity of studying this portion of the subject.

3. GENERAL CHEMISTRY. (200 Marks.) Dr. H. B. Baker, F.R.S.

The standard reached by the candidates seemed to me quite satisfactory. Many of them had pursued their studies under very disadvantageous circumstances, and it speaks very highly for their perseverance that many of them did so well. In each of the three branches of the subject, Physical, Inorganic, and Organic, the candidates, on the whole, acquitted themselves creditably, and the oral examination, which I consider a most valuable adjunct, convinced me that in most cases the knowledge shown was not the result of cramming. The note books produced often showed very careful experimental records, but one would rather have had the rough note books actually written in the laboratory, than the carefully made copies which were in most cases presented. It is often as interesting to see the account of an experiment which failed as of one which succeeded.

4. GEOLOGY. (100 Marks.) Dr. J. E. Marr, M.A., F.R.S., P.G.S.

The answers of the candidates in Geology were on the whole satisfactory, and proved that they had a good grasp of the principles of the subject. The knowledge of geological map reading showed a distinct improvement on that displayed in previous years, which is a very satisfactory feature of this year's examination.

5. AGRICULTURAL ZOOLOGY. (100 Marks.) Prof. J. Arthur Thomson, M.A.

The majority of the candidates were well-prepared, especially on the more practical side of the subject. The two practical questions included in the paper, which involved the classification and description of two specimens supplied, were well done with few exceptions. On the other hand, the statements made as to the general characters of Nematodes, Mites, or even Hymenoptera, showed great lack of practice in distinguishing the general from the particular, the important from the trivial. Very few of the candidates showed any understanding of Mendel's Law. In the oral examination many displayed a pleasing familiarity with the appearance of common animals of agricultural importance.

6. The Examiners in the five subjects included in Part II. report as below:—

6. PRACTICAL AGRICULTURE. (500 Marks.) Mr. T. A. Dickson, Mr. John Gilchrist, F.S.I., and Professor W. McCracken.

The proficiency of the candidates, with the exception of those who reached the honours standard, is moderate, and to many a more thorough preliminary education would have been an advantage. There has been an improvement in the

knowledge shown of the amount of capital required for the equipment of farms and of its apportionment. The majority possessed only a local knowledge of farming; but the proportion of those who have studied the agriculture of countries other than their own is greater than in former years. We would draw the attention of those responsible for the training of future candidates to the importance of instructing their students in the farming practices of the different parts of the kingdom.

7. AGRICULTURAL BOOK-KEEPING. (200 Marks.) Mr. W. Home Cook, C.A.

Thirty-seven candidates presented themselves for examination in this subject, and of these thirty-three obtained the necessary pass marks. The candidates as a whole answered well, and there was a distinct improvement in neatness and style as compared with last year's papers.

8. AGRICULTURAL CHEMISTRY. (200 Marks.) Dr. J. Augustus Voelcker, Ph.D., M.A., F.I.C., and Dr. Bernard Dyer, D.Sc., F.I.C.

Of the thirty-four candidates who presented themselves in Agricultural Chemistry, only about half-a-dozen exhibited excellent general knowledge, giving good replies, in both the written and oral parts of the examination. At the same time no special excellence was shown. While there were only six actual failures in this subject, a considerable number of the candidates did little more than just satisfy the requirements of the examiners. It appeared to the latter that, in many cases, especially where the candidates had been brought up on a farm, the lessons of their short training in General Chemistry had been largely forgotten. This would seem to indicate the desirability of more close supervision in Part I, to ensure that only those who have had a good grounding in General Chemistry should be allowed to pass on to the special branch of Agricultural Chemistry. A marked difference was shown between those who had had a full and systematic course and those who attempted to prepare themselves merely by attendance at short courses in chemistry. In the latter case the chemical knowledge possessed was not likely to form any real asset of the candidate's equipment, but was calculated to serve merely the purposes of the moment. This was brought out more particularly in the *rud vocæ* examination, which, as a whole, was not nearly as satisfactory as were the written replies. The oral examination, for instance, indicated that, in assigning money values to manures (question 8), the result was arrived at by adopting figures learnt by heart from certain published tables, but without any comprehension of the basis on which these figures were founded.

9. AGRICULTURAL ENGINEERING. (200 Marks.)

Mr. Arnold G. Hansard, B.A., M.Inst.E.E.

Of the candidates who entered for this paper, about one quarter did fairly good papers and eight failed to pass. The standard of the remaining papers can only be described as fair. Nearly every question produced quite good answers from some of the candidates, but it frequently happened that good answers to the problems were marred by carelessness in arithmetic. In considering the examination as a whole, both written and oral, it was very noticeable that many of the candidates had learnt by heart book-work which they were totally unable to apply to quite elementary practical problems.

10. VETERINARY SCIENCE. (100 Marks.)

Professor Sir John McFadyean, M.B.

With few exceptions the candidates displayed a satisfactory knowledge of the elementary anatomy, physiology, and hygiene of the domesticated animals. In one or two cases the written papers afforded evidence of defective general education.

7. The thanks of the Board are due to the authorities of the Leeds University, for their liberality and courtesy in placing the Large Hall and other rooms of the University at the Board's disposal for the Examination; and to the Examiners, for the care and attention they bestowed upon the written answers to the papers set, and upon the *viva voce* examination.

MORETON.
ALEXANDER CROSS.

JAMES MACDONALD.
THOMAS MCROW.

II.—REPORT ON 'THE RESULTS OF THE SIXTEENTH EXAMINATION FOR THE NATIONAL DIPLOMA IN DAIRYING, 1911.

1. The Sixteenth Annual Examination for the National Diploma in the Science and Practice of Dairying was held in September, 1911. The Examination for English candidates was held at the University College and British Dairy Institute, Reading, from September 16 to 22; and for Scottish Candidates at the Dairy School for Scotland, Kilmarnock, from September 23 to 30.

2. Thirty-three candidates were examined at the English centre. Of these, the following fifteen satisfied the Examiners, and have therefore been awarded the National Diploma in the Science and Practice of Dairying:—

English Centre.

- MISS AGNES WYLIE CRAWFORD, Essex County Technical Laboratories, Chelmsford.
 MISS ALICE IULIAN DEAN, University College and British Dairy Institute, Reading.
 BÉREKET-ZADÉ M. EKREM, University College and British Dairy Institute, Reading.
 VICTOR C. FISHWICK, Agricultural Institute, Ridgmont, Beds., and Midland Agricultural and Dairy College, Kingston, Derby.
 MISS GERTRUDE MARY GARRARD, County Dairy School, Chelmsford.
 MISS GRACE LEWIS, Lancashire C.C. Farm, Hutton, Preston.
 CYRIL HERBERT PAGE, Essex County Technical Laboratories, Chelmsford, Harper-Adams Agricultural College, Newport, Salop, and British Dairy Institute, Reading.
 LAURENCE HAMER PARR, Harper-Adams Agricultural College, Newport, Salop, and Midland Agricultural and Dairy College, Kingston, Derby.
 LEWIS H. PYKE, South-Eastern Agricultural College, Wye, Kent, and Midland Agricultural and Dairy College, Kingston, Derby.
 ALFRED ERNEST ROBERTS, Harris Institute, Preston, and Midland Agricultural and Dairy College, Kingston, Derby.
 MISS MARY CHALMERS TAYLOB, Midland Agricultural and Dairy College, Kingston, Derby.
 WILLIAM RICHARD WHITE, University College and British Dairy Institute, Reading.
 MISS MARY J. WILLIAMS, University College of Wales, Aberystwyth, and British Dairy Institute, Reading.
 MISS RACHEL WILLIAMS, University College of Wales, Aberystwyth.
 GORDON BURDASS YOUNG, Harper-Adams Agricultural College, Newport, Salop, and British Dairy Institute, Reading.

3. Forty-two candidates were examined at the Scottish centre, of whom the following twenty satisfied the Examiners, and have been awarded the Diploma:—

Scottish Centre

WALTER IAN BLACK, Bogany, Rothesay, Bute
 BENJAMIN BROWNE, JUN, The Boot, Windermerc
 RICHARD BRYDEN, Kingencleugh, Mauchline
 FRANK E. CORRIE, Giffel House, Doncaster
 DAVID W. FERGUSON, Cumwhitton, Heads Nook, Carlisle.
 THOMAS R. FERRIS, Market Lavington, Wiltshire
 SAMUEL GIBSON, Auchengibbert, Crocketford, Dumfries.
 MISS JESSIE GRANT, Wester Alves, Alves
 ROBERT HALL, Holmbank, Cark-in-Cartmel, Lancs
 JAMES MCKESSACK LEITCH, Inchstelly, Alves
 ANDREW C. McCANDLISH, Claunich, Sorbie, Wigtownshire.
 PATRICK W. MACKENZIE, Ardross Mains, Ayr
 MAURICE MALCOLM, Dunmore Faim, by Lairbet
 MISS IRENE MECHAN, 12 Victoria Crescent, Downhill, Glasgow
 DAVID ARNOTT MITCHELL, Bennan, Stranton, Maybole
 GEORGE N. M. MORRELL, 1 Commercial Street, Harrogate
 JAMES ROBINSON, Armstrong College, Newcastle-on-Tyne.
 WILLIAM SMITH, Wintersell Farm, Eden Bidge, Keir.
 MISS JESSIE E. STEPHEN, Willaston, Nantwich.
 WILLIAM AIREY YATES, Downham, Clitheroe, Lancs.

4. The Examiner in General Dairying (Mr. John Drysdale, who acted at both centres) reports that of the candidates who presented themselves for examination at Reading nine failed in paper work, the written answers being exceedingly faulty and weak. Of the twenty-four who obtained pass-marks, nine displayed conspicuous ability in the written answers and *vivâ voce* examination. Many of the candidates were sadly lacking in practical knowledge with regard to general dairying. It was evident that several had not read carefully the whole of the paper before beginning to write the answers, as, in many cases, quite unnecessary details were given, which would have been avoided if they had grasped the idea that the paper was intended to be regarded as a consecutive whole, dealing with the different branches of dairy farm management, instead of treating each question as an entirely separate one with no relationship to the others. In the practical work of butter-making, though a number of candidates failed to obtain pass-marks, the twenty who succeeded in doing so performed their work very well indeed.

Of the twenty-nine candidates who obtained pass-marks in paper work and the *vivâ voce* examination at the Scottish centre at Kilmarnock, eleven were conspicuously capable and stood out from the others just as the best at the English centre did. With regard to the remaining eighteen who obtained pass-marks, it was evident, in the course of the *vivâ voce*

examination, that they had acquired a very superficial knowledge and experience of dairy farming. Thirteen students failed to obtain pass-marks, their papers being exceedingly weak, displaying in many cases not only a defective knowledge of the scientific side of dairy farming, but also a rather defective elementary education. In the practical work of butter-making at Kilmarnock only one student failed to obtain pass-marks, and, with the exception of three who just succeeded in passing, the whole of the others performed the work in a conspicuously capable manner.

The arrangements made, both at Reading and Kilmarnock, for carrying out the work of the Examination were in every way complete.

5. Mr. John Benson, Examiner in Cheese-making at both English and Scotch centres, reports that as regards the practical work of the candidates the results were disappointing. The Examiner was sorry to observe a growing tendency on the part of some dairy students to attempt this Examination insufficiently prepared, and without first having had the lengthened and varied experience in the practice of cheese-making which is absolutely necessary for success. The failures in the practical work this year were numerous, which is unusual, for, as a rule, candidates score better in this section than in the written and oral examinations. On inquiry it was ascertained that a number of the candidates had only undergone a training of from eight to twelve weeks in cheese-making. It need hardly be said that such a short course is totally inadequate. It is unfair to those responsible for the training of the pupils, and disappointing to candidate and examiner alike. Many did excellent work and were quite up to the standard of recent years. A number of the candidates were really very skilful and satisfied the Examiner in every respect. In the written and oral part of the Examination the work was quite up to the standard. Generally the questions were answered correctly and intelligently, and in most cases a good grip had been obtained of the vital principles underlying successful cheese-making. Candidates, however, would be well advised to confine their answers within reasonable limits. Many of the answers given ran to an inordinate length.

For the benefit of candidates in future, it may be explained that an examiner does not require a dissertation on cheese-making, but definite and concise answers to the questions given.

The arrangements made for the conduct of the Examination were at each centre eminently satisfactory, and nothing better could have been devised.

6. The Examiner in Chemistry and Bacteriology at the English centre (Dr. Augustus Voelcker, M.A., B.Sc.), in his report, states that "The number of failures in this part of the Examination was considerably higher than has been the case previously. Out of the thirty-three candidates, no less than fourteen failed absolutely, and four others only just qualified with half-marks. Of the remainder, however, no less than eleven gained over two-thirds marks and several of the papers were really good and showed sound and special knowledge, this being particularly marked with respect to bacteriology.

"As a rule, the *viva voce* part of the Examination was not as satisfactory as the written papers, and it was in this that the general weakness in the elementary principles of chemistry was chiefly shown.

"While in some cases practical courses, both in chemistry and in bacteriology, had evidently been carefully followed, in others the practical work done had, as shown by the candidates' note-books, been of a very meagre and unsatisfactory nature. A further matter for regret is that it was evident that in several instances candidates presented themselves who had not the remotest chance of 'passing,' and steps should be taken to prevent this in future."

7. The Examiner in Chemistry and Bacteriology at the Examination in Scotland (Dr. T. W. Drinkwater, F.R.S.E., F.I.C.), reports that "Many of the candidates were very badly prepared for the Examination. They had not realised its scope or its standard. The spelling in some of the papers was poor, and the candidates responsible for these seemed to lack general education. There were a few papers of outstanding merit, and the remainder, with the exception noted above, were up to average standard."

MORETON, *Chairman.*

16 Bedford Square, London, W C
November, 1911.

ANNUAL REPORT FOR 1911 OF THE PRINCIPAL OF THE ROYAL VETERINARY COLLEGE.

ANTHRAX.

The following Table supplies information regarding the number of outbreaks of this disease and the number of animals attacked during each of the last six years :—

Year	Outbreaks	Animals attacked
1906	939	1,330
1907	1,084	1,456
1908	1,105	1,429
1909	1,317	1,698
1910	1,496	1,776
1911	907	1,120

At first sight these figures suggest that there has been a marked decline in the prevalence of anthrax during the last twelve months, but it must be noted that owing to an important provision of the new Anthrax Order, which came into force on January 1, 1911, the figures for the past year are not strictly comparable with those of the preceding years. This provision relates to the method of diagnosis in suspected cases of the disease. Under previous Orders the diagnosis in suspected cases of anthrax was left in the hands of the Veterinary Inspector acting under the directions of the Local Authority, and for the purposes of the Order the opinion of the local Veterinary Inspector had to be regarded as conclusive. For some years past, however, information possessed by the Board of Agriculture and Fisheries had led to the conviction that in a very considerable proportion of the reported cases of anthrax an error in diagnosis had been made. That the diagnosis was not always correct is not surprising, since in not a few cases it was based on the ascertainable history of the dead animal, coupled with the appearance presented by the unopened carcass. It has long been known that a diagnosis arrived at in this way is little better than simple guessing, owing to the fact that in cases of sudden death from various causes, such as poison, lightning-stroke, suffocation, &c., the carcass within a few hours after death generally presents the signs of rapid putrefaction which were at one time supposed to be specially characteristic of death from anthrax. It is true, however, that during recent years the majority of veterinary inspectors have based their opinion in suspected cases on the result of a microscopic examination of the blood, for which many of them have by practice made themselves quite competent. But the fact remains that, whether on account of want of skill or the use of inadequate instruments, in a considerable proportion of cases simple putrefactive bacteria which had invaded the blood

after death were mistaken for anthrax bacilli, with the result that the accuracy of the statistics provided by the Board of Agriculture was seriously vitiated.

Since the beginning of the present year the ultimate diagnosis in any suspected case of anthrax has been in the hands of the veterinary officers of the Board of Agriculture. As formerly, the local veterinary inspector has still to make a diagnosis, but, save when he decides that the case is not one of anthrax, the diagnosis has to be confirmed by an officer of the Board of Agriculture before the place at which the death occurred is declared to be an "infected place." For statistical purposes also no case is reckoned as one of anthrax until it has been so diagnosed by a Veterinary Inspector after microscopic examination of blood or other material which has been forwarded to the Laboratory of the Board.

It will thus be seen that the statistics for the past year do not enable one to say whether the disease has been more or less prevalent than in the previous years given in the table, since they include only actual cases diagnosed microscopically by experts; whereas the figures for previous years include all reported cases, no matter how the diagnosis had been arrived at.

There would probably not be much error in assuming that there has been no real decline in the prevalence of the disease in 1911, and that the figures are only smaller because of the elimination of mistakes in diagnosis. At any rate, the provisions of the new order with regard to diagnosis constitute a distinct improvement from the owner's point of view, since they greatly diminish the risk of his premises being wrongly declared an infected place when the sudden unexpected death of one of the animals compels him to notify the case as one of suspected anthrax. In a few years also the information collected under the new procedure will enable one to trace the real incidence of anthrax in different parts of the country, and to compare the true mortality occasioned by the disease from year to year.

GLANDERS.

The varying incidence of glanders in Great Britain during the last eight years is shown in the following table :—

Year		Outbreaks		Animals attacked
1904	...	1,529	...	2,658
1905	...	1,214	...	2,068
1906	...	1,066	...	2,012
1907	...	854	...	1,921
1908	...	789	...	2,433
1909	..	533	...	1,753
1910	...	351	...	1,014
1911	...	208	...	501

The foregoing figures attest the marked reduction in the prevalence of glanders in this country during the last seven years, and more particularly during the last four. Since the actual eradication of pleuro-pneumonia and rabies this reduction constitutes the most striking success which has been achieved by means of the Diseases of Animals Acts, and it is therefore interesting to examine how the improved state of things has been brought about.

During the thirty years preceding 1904 the number of outbreaks reported annually varied considerably, but in no year did they fall so low as 500, and from 1887 to 1903 they averaged over 1,100 and never fell below 700. Throughout the whole of this period, and indeed down to the end of 1907, the only method of diagnosing glanders which was taken into account in dealing with the disease under the Glanders Order was what is conveniently termed clinical diagnosis. By this is meant that a case was not diagnosed as one of glanders unless the horse exhibited the well-known external lesions of glanders or farcy. The law, therefore, took no cognisance of the fact that in glanders, as in other bacterial diseases, there is a period of incubation, during which the animal shows no abnormal symptoms whatever, although the germs of the disease are multiplying in some part of the body.

It ought to be said, however, that although the earlier Glanders Orders made no provision for counteracting the danger involved in the movement of horses affected with glanders in its incubative stage, this was not so much because the danger in question was not suspected, as because at that time veterinary science knew no method by which glanders could be recognised before the development of outward symptoms. In the early nineties of last century mallein was discovered and brought into use, and the experience thus gained in this and other countries almost revolutionised the views which had previously been generally held regarding what may be termed the normal course of glanders in the horse. Formerly it had been generally believed that the latent or incubative period of the disease was almost always short, that when a horse became infected outward signs of the disease were soon developed, and, furthermore, that in the great majority of cases glanders soon terminated fatally if the disease was allowed to run its natural course. In many outbreaks when the mallein test was applied to all the inmates of the stable, an alarming number of the apparently healthy animals reacted, and growing experience derived from post-mortem examination of such reacting horses soon showed that the reaction to mallein could be accepted as proof of the existence of disease, the animal's healthy appearance notwithstanding.

The second fact brought to light by the extensive application of the mallein test in infected studs was that the incubative period of the disease was often far longer than had been suspected. Horses found to be infected by applying the mallein test to them sometimes developed outward symptoms soon afterwards, but in many cases the reacting animal never became clinically diseased or did not develop external sign of glanders or farcy for months or years afterwards.

As soon as these facts were recognised it became apparent that it was vain to expect that glanders could be stamped out simply by killing the obviously diseased horses. When the disease broke out in a stud of any size, slaughter of visibly glandered or farcied animals (which was all that the law required except disinfection of the premises) nearly always left one or more horses affected with the disease in its incubative stage. The disease was therefore not eradicated from the stable in which the outbreak occurred, and opportunity was left for its spread to other studs by the sale of some of the apparently healthy but in reality diseased horses.

It took a period of at least ten years to bring these facts home to the minds of horse-owners, and thus to prepare the way for such an alteration in the then existing Glanders Order as would enable Local Authorities to prevent the sale of horses affected with glanders in its incubative stage. This alteration was effected in the new Order which came into force on January 1, 1908, and the fruits of it are seen in the Table already given. Under this Order when a case of glanders is detected in any stable, and all the visibly diseased horses have been destroyed, the apparently healthy horses are viewed as suspected animals, and their movement is restricted until the suspicion has been removed by the mallein test. Such of the apparently healthy horses as react to this test have to be slaughtered, compensation being paid to the owner.

Two points in connection with the figures given in the Table require some explanation. The first is that between 1904 and 1907 the outbreaks had fallen by nearly 50 per cent, although the new Order did not come into force until 1908. This reduction can be accounted for by the fact that prior to 1908 the very measures which can now be enforced under the new Order were voluntarily employed by many of the large horse-owners in London, that is to say, many owners had recognised that it would pay them to have the whole of their horses tested at intervals with mallein with a view to destroying or isolating those that reacted.

The other point requiring explanation is that there has been a greater fall in the number of outbreaks than in the

number of animals attacked. That this would be a result of the new Order was foreseen. Under the old procedure, when one horse in a stable developed obvious symptoms of glanders, and simple inspection of the other horses revealed no other cases, the outbreak was reckoned to be at an end as soon as the diseased horse had been killed. Thus it often happened that an outbreak was returned as having only one animal attacked, because in the absence of a mallein test the inspector obtained no knowledge of the horses in the incubative stage of the disease. If one of these, after an interval, became clinically glandered the outbreak figured in the returns as a new one. Under the present procedure, on the other hand, each outbreak includes not only the first detected clinical case but also the cases that are immediately afterwards detected by applying the mallein test to the apparently healthy horses.

Although the effect which the present Order has produced is very striking and not less than an intelligent consideration of the circumstances would have led one to expect, it may still be some years before glanders is absolutely stamped out. Obviously such radical measures as are now in force are likely to show the most striking results at the outset, when the disease is widely prevalent, and they may appear to act more slowly after the first marked reduction has been effected. It is, however, very encouraging to observe that the ratio of decrease in the number of outbreaks during 1911 is not less than that of the preceding year.

SWINE FEVER.

The following Table shows the number of reported outbreaks of this disease during each of the last six years :—

Year				Outbreaks
1906	...	...	...	1,280
1907	...	...	...	2,336
1908	...	...	...	2,067
1909	...	...	...	1,650
1910	...	...	...	1,598
1911	...	...	...	2,466

The above Table is the unfortunate offset to the success which has attended the operations of the Board of Agriculture and the local authorities in dealing with the other contagious diseases of animals during the past year.

In order to appreciate properly the present position with regard to swine-fever it is necessary to go farther back than the period covered by the Table. Between the years 1879 and 1893 the disease was dealt with by the local authorities under the Contagious Diseases (Animals) Act. During that period the smallest number of reported outbreaks in any one year was 1,717 (in 1881), and the largest 6,813 (in 1886). The smallest

number of swine returned as attacked with the disease was 7,991 (in 1881), and the largest 41,973 (in 1887). During the last complete year of this period (in 1892) there were 2,377 outbreaks, with 11,729 swine attacked.

Since the 1st November, 1893, the disease has been dealt with directly by the Board of Agriculture, and during the first complete year of the new *regime* 5,682 outbreaks were confirmed and 56,296 swine were slaughtered in connection with these. Between 1895 and 1905 a marked impression was made on the prevalence of the disease, the outbreaks having been reduced in the last of these years to 817 and the swine slaughtered to 3,876. The further history of the campaign is completed by the Table, which shows that there has been a very serious recrudescence of the disease during the past year.

Suggested explanations of the failure of the attempt to stamp out swine-fever have been contained in previous annual reports, and need not be here repeated, more especially as it cannot be said that they account satisfactorily for the great increase in the number of outbreaks in 1911. The procedure of the Board has been varied from time to time in some important particulars, the alterations having presumably been inspired by a desire to diminish the loss and inconvenience occasioned to owners by the regulations, or to reduce the annual expenditure involved in the slaughtering of animals suspected of having been exposed to infection.

The Departmental Committee which was appointed in April, 1910, to inquire into the subject has already published an interim report, from which it appears that none of the evidence submitted by the witnesses who appeared before the Committee indicated that it would be advisable to make any radical change in the administrative machinery now employed by the Board. Among other recommendations the Committee advise that the policy of "slaughtering out" should be applied generally as soon as practicable, and they do not favour any relaxation of the general restrictions which have been placed on the movements of swine in districts where the disease exists.

Unfortunately it must be admitted that the recent great increase in the number of outbreaks almost precludes the general adoption of the drastic policy recommended by the Committee, that is to say, the prompt slaughter, not only of visibly affected swine, but also of every pig that can reasonably be suspected of having been within the range of contagion. Such a plan can only be successfully carried out when liberal compensation is allowed for the apparently healthy swine slaughtered, and at the present moment it would involve enormous expense. Meanwhile more, rather than less, severe restrictions should be imposed on the movement of pigs in

infected localities, and the utmost penalties allowed by the law should be imposed on persons convicted of having concealed the existence of the disease, or of having unlawfully moved diseased or suspected animals.

FOOT-AND-MOUTH DISEASE.

During the course of 1911 this disease broke out in five different parts of England, viz., in the county of Surrey in March, in Middlesex and Sussex in July, in Derbyshire in August, and in Somerset in September. In the case of the Surrey and Derbyshire outbreaks the disease was detected before it had extended beyond the premises in which the first case occurred, but in the Middlesex and Sussex outbreaks animals on three different premises, and in the Somersetshire one on ten different premises, were involved. In each case the whole of the diseased and suspected animals were slaughtered by the Board of Agriculture, and fortunately this prompt action, coupled with temporary restrictions on the movement of animals within a certain radius of the outbreak, speedily brought the disease to an end.

In the circumstances this result must be regarded as very satisfactory, but the appearance of the disease at no less than five different centres within a period of seven months is very disquieting, and must cause constant anxiety as long as the plague continues to exist in the western parts of the Continent. It is to be hoped that the Departmental Committee which has been appointed to study the subject may succeed in throwing some light on the manner in which the disease is introduced, although from the nature of the circumstances the prospect of being able to trace the exact passage of the virus from the Continent to this country in any given case is far from bright.

Meanwhile it is of great importance that, in spite of the supposed freedom of the country from foot-and-mouth disease, farmers should regard with suspicion any case in cattle, sheep, or swine in which soreness of the mouth (manifested by slavering) and lameness or tenderness of the feet are observed, and any such case should be promptly notified to the police.

PARASITIC GASTRITIS IN SHEEP.

During the past year losses occasioned by stomach worms in sheep were exceptionally severe in many parts of the country, especially in the months of April, May, and June. The worms which commonly infest the fourth or true digestive stomach in the sheep belong to at least three species, and in cases of parasitic gastritis—that is to say, cases in which the worms are sufficiently numerous to cause illness—two, or even all three of these species are often present together. Contrary to

what appears to be the rule in this country, the *Strongylus contortus* was the species mainly responsible for the losses during the past year.

The adult worms, male and female, inhabit the true digestive stomach, and the eggs which are there laid by the females are carried out with the stomach contents into the intestine and are eventually expelled with the faeces. From the eggs are hatched out the young worms. These young worms nourish themselves on the organic matters present in the faeces or earth in which they have been hatched out, and in order to fit them for life in the sheep's stomach they have to undergo a further process of development, which is accompanied by a shedding of their original cuticle or skin. When the worms have reached this stage they are incapable of further development in the outer world, but when they find their way into the stomach of a sheep they rapidly attain to sexual maturity, the males and females copulate and the eggs laid by the latter begin to be passed out with the faeces. Both the eggs and the young worms when first hatched out are liable to be killed by frost or drought; but when the latter have undergone the process of development mentioned above they are much more resistant to vicissitudes of weather, and may retain their vitality for long periods, awaiting an opportunity to be taken in by a sheep.

The points in the life cycle of the worms which are of chief importance for an understanding of the manner in which they cause disease in sheep are the following:—

(1) The worms do not multiply in the outer world, since only those in the stomach are capable of reproduction.

(2) Although reproduction takes place in the stomach this does not directly increase the number of worms there present, because the eggs have to leave the body of the sheep in order to be hatched out.

(3) The faeces of sheep infested with stomach worms are not immediately dangerous for the sheep. The excrement and the land on which it has been voided only become dangerous when the eggs have hatched out and the young worms have undergone a process of development.

(4) Warmth and abundant moisture are favourable, while frost and drought are fatal, to the eggs and newly hatched young worms.

These facts not only explain the occurrence of outbreaks of parasitic gastritis, but also suggest the means by which the disease may be prevented. There cannot be any doubt that the explosive serious character of the outbreaks during the second quarter of 1911 were the outcome of the preceding mild and wet winter and spring. The fact may be recalled

that the summer and autumn of 1910 were also characterised by a heavy rainfall, and thus for a period of a whole year the climatic conditions were eminently favourable for the life of the young worms. Probably during the whole or the greater part of this period the stomachs of sheep at grass were gradually becoming more and more infested with worms, and eventually these became sufficiently numerous to cause serious effects. In this connection it must be remembered that at all times these worms are of nearly constant occurrence in apparently healthy sheep of all ages, but only in small numbers. Given favourable conditions, therefore, the seeds of serious mischief are constantly present in practically every flock, and when an outbreak occurs one does not need to search for an outside source to explain it.

The losses during the past year were most severe among ewes, and in many cases only the ewes were affected, although the lambs were running with them. The escape of the lambs in these cases was no doubt due to the fact that the drought had already set in before the disease became serious among the ewes, and this, in spite of the enormous number of eggs voided by the ewes, saved the lambs from infection by interfering with the development of the young worms.

Coming next to the question of prevention, it must be observed that the losses of the past year were not an inevitable result of the preceding mild and humid season. The absolute eradication of stomach worms from a flock can scarcely be considered practicable in the conditions of sheep-breeding in this country, but the prevention of serious losses is possible even in the seasons which are most favourable for the life of the parasites. The two things which have to be avoided with that object are (1) overstocking with sheep, and (2) continuous grazing of the same pastures with sheep for long periods. An outbreak of parasitic gastritis can be determined at will by grazing a field exclusively with sheep for several years. In reply to this it may be said that the statement is contradicted by the experience in connection with sheep-farming on hill and mountain land, which has often been grazed continuously and exclusively by sheep without any sensible losses from parasitic gastritis. The objection, however, does not apply, for on poor land the area of ground per sheep is large, and the pollution of the ground with excrement is proportionally less, with the result that the opportunities for worms to be taken in by sheep are reduced. On the other hand, when comparatively good pasture is made to carry the largest possible number of sheep, and any of these sheep are infested with stomach worms, the chances that young parasites will be taken in with the grass are very great.

As every new worm thus added to the stomachs of the sheep increases the number of eggs passed out with the faeces, in the circumstances considered the ground must soon become highly polluted with eggs, and only the accident of unfavourable weather conditions can then prevent a serious outbreak.

Unfortunately information is still lacking regarding some important details in the life cycle of these parasites. It is known that under the most favourable conditions the eggs may hatch out in a few hours, but it is not known what, at different seasons of the year, is the shortest period within which the young worms may reach the stage which fits them for residence in the sheep's stomach. If this were known one could fix the time within which sheep must be moved from one field or plot to another. In the circumstances one can only advise that the flock should be given a change of ground as often as possible, and that frequent changes are imperative when a large number of sheep are kept on a small area. The benefit of frequent changes is shown by the fact that outbreaks of parasitic gastritis are uncommon among sheep fed on growing roots and other crops on ploughed land.

It has already been mentioned that the young worms after they have reached a certain stage of development are very tenacious of life, but it is probable that such worms perish in less than a year if they do not obtain access to the sheep's stomach. Ploughing and cropping are absolutely reliable for destroying the worms, no matter how badly polluted the pasture may be, but it is doubtful whether such dressings as lime and salt are of any value in this direction. As a rule pasture can be kept safe for sheep by alternately grazing it with sheep and cattle, because the two species of worms which are most frequently the cause of parasitic gastritis in sheep seldom or never cause disease in cattle.

When an outbreak has already begun it may generally be assumed that every member of the flock is in danger because of the large number of worms already in the stomach, and it is therefore of the utmost importance to detect the earliest cases, and to take steps to check the further infection of the flock. Loss of condition and diarrhoea are the usual symptoms, and at an advanced stage of the disease the head may appear swollen owing to the presence of dropsical liquid beneath the lower jaw. Animals presenting these symptoms should be removed from the flock, and if possible kept indoors and fed liberally out of troughs, as that diminishes the chance of infection with faeces. The place should be frequently cleaned out, and the manure burned or ploughed down. For the reasons already explained, the remainder of the flock should be frequently moved, and if they are at grass all overcrowding must be avoided.

The disease, unfortunately, is scarcely amenable to treatment after symptoms have set in, owing to the impossibility of causing medicines to pass directly into the stomach in which the parasites are located, but there is a certain amount of clinical evidence to show that turpentine and other so-called anthelmintics are beneficial when given at the outset.

TUBERCULOSIS.

The Royal Commission on Tuberculosis which was appointed in 1901 issued its third and final Report during the past year, and the conclusions embodied in it have a double interest for stock-owners, because these share with other members of the population whatever risks there may be of animal tuberculosis being transmitted to man, and at the same time are specially concerned to know to what extent their economic interests may be threatened by the measures considered necessary to counteract such risks. It therefore appears to be appropriate to summarise here the results of the Commission's investigations during the last ten years, and to take stock of the present position of the question touching the inter-connection of human and animal tuberculosis.

In the first place it may be well to recall the circumstances which led to the appointment of the Commission. This was a pronouncement made by the late Professor Koch in a lecture delivered at an International Congress on Tuberculosis which was held in London in 1901. It was to the effect that, contrary to the opinion then very generally held in the medical and veterinary professions, human and bovine tuberculosis were practically independent diseases, and that cases of human infection with tubercle bacilli derived from cattle were so rare, if they occurred at all, that it was not worth while to take any steps to counteract the danger. The principal arguments advanced by Professor Koch in support of this view were—

1. It was held that if tubercle bacilli present in milk or meat were capable of infecting human beings, such infection must have its starting point in connection with the digestive organs, and in view of the frequent presence of the bacilli in milk, cases of this kind ought to be frequently met with. In reality, however, such cases were very rare.

2. The tubercle bacilli present in the lesions of cattle affected with tuberculosis were held to be different in some important respects from those present in cases of human tuberculosis, and therefore, given an alleged case of human tuberculosis derived from a bovine source, the question whether the disease had been contracted in that way or not could be definitely determined by studying the character of the bacilli present in the patient's lesions. So far, attempts to detect in human beings the

presence of bacilli with the special characters of those occurring in bovine lesions had failed.

The great bulk of the work done by the Royal Commission was designed to test the soundness of these arguments.

At the outset the Commission devoted themselves to a minute study of the characters of the bacilli found respectively in cases of human consumption (which is the commonest form of the disease in man) and in cases of tuberculosis in cattle. The general result of this part of the work was to confirm one of the premises contained in the second argument set out above, viz., that the bacilli which are usually present in cases of consumption in man differ in some respects from those found in tuberculosis of the bovine species. These differences relate to the appearance presented by artificial cultures of the bacilli and the effects which they produce when animals of different species are experimentally infected with them. The broad difference in the first of these respects is that when cultivated outside the body the bacilli derived from tuberculous cattle grow more slowly and less luxuriantly than those which are usually present in cases of tuberculosis in man. The second difference is that the bovine bacilli are decidedly more virulent than the human when they are experimentally used to infect different animals, such as the ox, rabbit, and pig.

Without begging any of the question in dispute, it is therefore convenient to agree to call the bacilli found in the natural disease of cattle the "bovine type" of tubercle bacilli, and the bacilli which are more commonly present in tuberculosis of man the "human type."

This point having been settled, the next step in the investigations naturally was to proceed to examine the characters of the bacilli present in a series of cases of human tuberculosis in order to determine whether they were of the human or of the bovine type. Obviously in this search for the bovine type in human beings attention was first turned to cases in which the disease appeared to have begun in connection with alimentary tract (the lymphatic glands of the throat and neck, the intestines, and the lymphatic glands of the abdomen), for if milk or meat containing tubercle bacilli causes tuberculosis in man that is where one would expect the disease to have its starting point. The search in this direction soon showed that Koch was mistaken in supposing that such cases were rare, for as a matter of fact the Royal Commission had no difficulty in finding cases of human tuberculosis in which the disease had begun in connection with the parts mentioned above.

Altogether the Royal Commission investigated thirty-eight cases in which the situation of the disease appeared to justify the inference that, whether the infecting bacilli were of the

human or of the bovine type, they had been taken in with food materials—that is to say, the bacilli had become effective through being swallowed. Twenty-nine of these cases were of so-called primary abdominal tuberculosis, and the remaining nine were cases in which the glands of the neck were diseased.

In the first of these series it was found that the lesions contained the bovine type of tubercle bacillus in fourteen cases, and the human type of tubercle bacillus in thirteen cases. In the remaining two cases of this series the lesions contained a mixture of the two types of tubercle bacilli.

In the second series six cases contained the human type of bacillus, and the remaining three the bovine type of bacillus.

It will thus be seen that in no fewer than seventeen cases out of a total of thirty-eight cases of primary alimentary tuberculosis selected at random the disease was caused by bovine tubercle bacilli. Thus, even leaving out of account the two cases in which both types of bacilli were simultaneously present, in this series of tuberculous human beings the disease was proved to have been caused by bovine tubercle bacilli in 45 per cent. of the cases. As emphasising the importance of these facts it must be observed that the bacilli were proved to be of the bovine type by the characters which Professor Koch had himself indicated as those by which that type can be definitely identified.

Not only the investigations of the British Royal Commission, but also inquiries conducted on parallel lines in other countries, have proved that in human beings infection by way of the alimentary canal is by no means a rare occurrence, especially in young subjects. One cannot pretend to say what proportion cases of this kind have to the total number of cases of tuberculosis in human beings, but probably it is not less than 3 or 4 per cent.; and, taking this as the basis of calculation, it follows that a large number of persons in this country are annually infected with tubercle bacilli which have been derived from cattle.

But, of course, the Royal Commission did not confine their investigations to cases of human tuberculosis in which the disease appeared to have been set up by bacilli that had been swallowed. They also submitted to investigation forty-two cases of so-called "consumption," or pulmonary tuberculosis. In all of these cases with the exception of two the bacilli present were found to be the human type, but in two cases the evidence was perfectly clear that the lung disease was caused by bovine tubercle bacilli and by these alone.

In three cases of general tuberculosis which were investigated and in three of tuberculosis meningitis the lesions yielded human tubercle bacilli only.

In five cases of tuberculosis involving the glands (bronchial glands) three contained human tubercle bacilli, and two others contained a mixture of human and bovine tubercle bacilli.

Thirteen cases of joint and bone tuberculosis were investigated, and in all of these the lesions contained the human tubercle bacilli only.

In one case each of tuberculosis of the testicle, kidney, and suprarenal gland only human tubercle bacilli were found to be present.

It is well known that the disease of the human skin to which the term "lupus" has long been applied is in reality a form of tuberculosis. Twenty cases of this kind were examined by the Royal Commission, and although in the majority of these cases the bacilli exhibited slight variations from the characters proper either to the human or the bovine type, in at least eight of the cases the bacilli appeared to be bovine. In one case the bacilli present in the lesions had all the special characters of the bovine type.

In view of the facts above mentioned it is no longer possible to doubt that a by no means negligible proportion of the cases diagnosed as tuberculosis in human beings have had their origin in bacilli derived either directly from cattle or from other animals, such as pigs, which have themselves been infected with bovine tubercle bacilli. Probably if Professor Koch had now been alive he would himself have admitted the propriety of putting in operation such reasonable measures as are calculated to prevent the infection of human beings in this way, and the only question now remaining is to determine what measures having this for their object are reasonable and practicable.

There is a general consensus of opinion that, in the great majority of cases in which human beings become infected with bovine tubercle bacilli, milk is the medium of infection. One cannot deny that there is a conceivable risk of human infection through the flesh, and more particularly the actually diseased organs, of tuberculous cattle and pigs; but, having regard to the fact that such articles of food in the process of cooking are generally raised to a temperature sufficient to destroy the bacilli, one cannot suppose that in this country any considerable proportion of human beings are thus infected with tuberculosis. On the other hand numerous investigations conducted both in this country and abroad have shown that tubercle bacilli are quite frequently present in milk as it reaches the consumer, and with a view to devising measures to keep it free from tubercle bacilli it is important to know what are the principal sources of tubercle bacilli found in milk. The opinion of the Royal Commission with regard to this

question is embodied in the concluding paragraph of their report, which is as follows:—

“Bovine tubercle bacilli are apt to be abundantly present in milk as sold to the public when there is tuberculous disease of the udder of the cow from which it was obtained. This fact is, we believe, generally recognised though not adequately guarded against. But these bacilli may also be present in the milk of tuberculous cows presenting no evidence whatever of disease of the udder, even when examined post-mortem. Further, the milk of tuberculous cows not containing bacilli as it leaves the udder may, and frequently does, become infected by being contaminated with the faeces or uterine discharges of such diseased animal. We are convinced that measures for securing the prevention of ingestion of living bovine tubercle bacilli with milk would greatly reduce the number of cases of abdominal and cervical gland tuberculosis in children, and that such measures should include the exclusion from the food supply of the milk of the recognisably tuberculous cow, irrespective of the site of the disease, whether in the udder or in the internal organs.”

This paragraph is quoted here not so much because it probably foreshadows the alterations likely to be made in the existing law in order to prevent or limit the danger that human beings may become infected with tubercle bacilli derived from cattle, as because it suggests to farmers and dairymen what are the steps which they themselves ought immediately to take with the same object. What they have to guard against above everything else is (1) allowing milk to be sold or supplied for human food which comes from a cow presenting symptoms of tuberculosis of the udder, because there is no doubt that that is the main source of the bacilli found in milk. (2) Even although the udder appears to be perfectly healthy the milk ought to be condemned if, on account of emaciation, cough, or other obvious signs, the owner has good reason to suspect that the cow is suffering from tuberculosis. The necessity for this precaution lies in the fact that, although as a rule the milk does not contain tubercle bacilli while the udder is healthy, there is sufficient evidence to show that in the late stages of tuberculosis the milk may contain tubercle bacilli in spite of the absence of any evidence of disease in the mammary gland itself. (3) Every possible effort should be made to prevent the admission into milk, either at the time of milking or afterwards, of impurities, and especially of particles of excrement and other dirt from the cow or cow byre. Such precautions are necessary because the commonest form of tuberculosis in cattle is that in which the disease affects the lungs, and in such cases bacilli that are coughed up from the lungs are for the

most part swallowed and passed out of the body uninjured with the faeces.

In conclusion it may be said that according to present knowledge a conscientious farmer or dairyman, anxious to ensure the freedom of the milk which he supplies from tubercle bacilli, cannot be expected to do more than see that it is obtained with the greatest possible cleanliness, and that it is derived solely from cows that present no indication of being tuberculous either in the udder or elsewhere. It ought to be added that he cannot be expected to do any less.

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ANNUAL REPORT FOR 1911 OF THE CONSULTING CHEMIST.

THERE was, in 1911, a slight diminution in the number of samples sent for analysis, this being 439 as against 480 in 1910.

In addition to these, there were 226 samples of milk and 43 samples of cider and perry analysed in connection with the Norwich Show of the Society.

The detailed list of samples examined is given at the end of this Report.

The most marked feature of the year has been the rise in the price of feeding materials. Linseed cake, for instance, has gone up to 11*l.* per ton, or even over this, while undecorticated cotton cake has seldom been below 6*l.* per ton. The difference of price between Egyptian and Bombay cotton cakes has been very variable. As a rule, this has been about 10*s.* per ton, but the prices of the two have not unfrequently approximated to within 5*s.* per ton of one another.

Decorticated cotton cake has been scarce, and its price high, namely, 8*l.* to 8*l.* 10*s.* per ton.

Soya bean cake has hardly met with the increased demand at one time expected of it.

No new feeding material of any account has been introduced to the market, except, possibly, "Bastol," a preparation of treated wood pulp and molasses.

As regards the prevalence of adulteration, linseed and cotton cakes have been found to be uniformly good and free from adulteration. Occasionally "Bombay" cotton cake has been sold for "Egyptian." In compound cakes, the tendency for a high percentage of sand to occur continues.

Adulteration of feeding stuffs, when found, has occurred mostly in the case of offals of wheat, such as pollards, toppings, sharps, &c., and occasionally with barley meal. The improvement noted last year in this respect has not been maintained, and it behoves purchasers to keep a strict look-out for the occurrence—more particularly in the above—of rice-husk, a worthless and irritating material, the presence of which, apart from its detection by the microscope, is indicated by the high percentage of silica shown in an analysis. It is satisfactory to record that the Board of Agriculture has recognised rice-husk as a “worthless” material for feeding purposes, and, as the result, several prosecutions under the Fertilisers and Feeding Stuffs Act have been successfully carried through. Notably has this been the case with a material sold under the name of “Cod-Liver Oil Condition Mixture,” and which contained considerable admixture of rice-husk or “shudes.”

In regard to manures, these have been—as a whole—very satisfactory, and the prices for the materials in general use have remained much as they were.

There would appear to have been a considerable increase in the extent to which basic slag is used. In connection with the sale of this material it may be remarked that certain firms now sell this, not on the amount of “total phosphates” contained, but on its “solubility”; that is, the percentage of phosphates soluble in a 2 per cent. citric acid solution. This practice proceeds on the assumption that it is only the so-called “soluble” phosphates which are of value. That, however, this is the case I am by no means inclined to admit. No doubt the phosphates soluble in citric acid indicate that portion which is more readily assimilable than the remainder, but I am not at present inclined to say that the total amount of phosphates is by no means immaterial. This is a point upon which experimental work of inquiry is really needed. What is, however, very essential in basic slag is the “fineness of grinding.”

The movement in the direction of sugar-beet cultivation has made decided progress in England during the year, though it has not yet resulted in the establishment of a factory in this country. Until this be done, it is impossible to ascertain whether beet-growing in England will “pay.” That sugar-beet can be grown perfectly well is now beyond dispute. The past exceptional season has been very unfavourable to the progress of the movement, and, indeed, it has been somewhat fortunate that factories were not established, inasmuch as there would have been but little produce to send to them.

At the Woburn Experimental Farm, plots of sugar-beet of different varieties and under different conditions of planting

have been grown, and the results will in due course be published. I append a few analyses of sugar-beet and similar root crops.

During the year two circulars referring to adulteration and high prices have been sent out privately to Members of the Society. These comprised the following subjects :—

- (1) "Cod-Liver Oil Condition Mixture," containing rice-husk.
- (2) "Rapid Compound Fish Manure"—very dear.
- (3) American hominy food—below guarantee.
- (4) Bombay cotton cake—sold as "Egyptian."
- (5) "Oat Feed," consisting largely of oat-husks.
- (6) Thirds—adulterated with rice-husk.
- (7) Barley meal—adulterated with rice-husk.

In the first of these cases, several prosecutions for the sale of the like material ensued under the Fertilisers and Feeding Stuffs Act, and in all of these a penalty was enforced. In No. 6 several pigs had been killed, and compensation was paid to the extent of 30%.

In the course of the year the Board of Agriculture issued a circular drawing attention to fertilisers which were sold at very high prices. This is a work which the R.A.S.E. has for a long time been doing, frequently drawing the attention of its Members to cases of fertilisers which have been sold at much above their real values. The Fertilisers and Feeding Stuffs Act, though it secures that fertilisers shall be sold up to the guarantee given with them, deals in no way with their value. A fertiliser may come up to the guarantee given with it, but this by no means implies that it is worth the money, and the only real security for purchasers is to make sure of the quality by having an analysis made.

The Fertilisers and Feeding Stuffs Act has, on the whole, worked better than in former years, though the extent to which it is made use of is far from satisfactory. Still, as has been remarked above, certain forms of adulteration, notably that of the presence of rice-husk, have been dealt with.

An attempt at amending this Act has been made by the introduction of the "Sales for Agricultural Purposes" Bill, this including in its provisions the examination of seeds, sheep-dips, &c. Though I consider that, in certain points, improvements have been suggested by the Bill, the latter proposes to introduce many complications which will, I think, make it unworkable.

I proceed to give the details of the principal features brought to my notice during the year as derived from the analysis of samples submitted to me by Members of the Society.

A. FEEDING STUFFS.

1. Linseed Cake.

There is nothing special to remark about this. The samples sent me have been uniformly good and up to guarantee.

2. Cotton Cake.

Egyptian cotton cakes have been, as a rule, good in quality and condition, but with Bombay cakes several woolly and indifferent samples have been met with, some of these showing high percentages of sand. In one instance, where cake had been purchased as "from pure Egyptian cotton seed," it was found to be made from "Bombay" seed, and an allowance of 10s. a ton was given.

A Member submitted to me two samples of cotton cake, "A" costing 5*l.* 12*s.* 6*d.* a ton, and guaranteed to contain oil 5·82 per cent., albuminoids 21·22 per cent, and "B" costing 6*l.* 15*s.* a ton, and guaranteed to contain oil 5·12 per cent. and albuminoids 24·87 per cent. The analyses were as follows:—

	A	B
Moisture	12·48	12·38
Oil	5·82	5·12
¹ Albuminoids	21·81	24·37
Carbohydrates, &c.	54·65	52·76
Mineral matter (ash)	5·24	5·37
	<hr/> 100·00	<hr/> 100·00
¹ Containing nitrogen	3·49	3·90

"A," though the cheaper cake, was also the better.

3. Soya Bean Cake.

Several samples of this material have been examined, and in no case has any adulteration been found.

4. Cocoa-nut Cake.

A sample of this gave the following analysis:—

Moisture	8·44 ²
Oil	7·42
¹ Albuminous compounds	20·68
Carbohydrates, &c.	} 56·42
Woody fibre (cellulose)	
² Mineral matter (ash).	7·04
	<hr/> 100·00
¹ Containing nitrogen	3·31
² Including sand	·54

This cost 7*l.* 10*s.* per ton, f.o.r. London, and it is undoubtedly a good food, more especially for dairy cattle.

5. "*Cod-Liver Oil Emulsion Mixture.*"

Three analyses of this material are appended. In each case there was admixture of rice-husk (shudes), and the presence of this is shown by the high amounts of silica stated in the analyses.

	A	B	C
Moisture	12.78	11.35	10.86
Oil	8.71	8.76	7.91
Albuminoids	4.69	5.44	12.69
Carbohydrates, &c.	50.71	52.80	53.97
Indigestible woody fibre	14.66	14.06	9.04
¹ Mineral matter (ash)	8.45	7.59	5.53
	<hr/> 100.00	<hr/> 100.00	<hr/> 100.00
² Including silica	6.08	5.59	2.47

These represent admixtures of approximately 35, 30 and 12 per cent. of rice-husk respectively.

6. *Barley Meal.*

In one case an admixture of rice-husk (shudes) was found. The meal had been given to pigs, and they had not done well on it.

7. *Bran.*

The question has not unfrequently been raised whether the coarse bran, known as "broad bran," is superior in value to the ordinary, or more finely ground, bran. A Member of the Society submitted to me samples of the above. The "broad bran," which generally finds favour for horse-feeding, cost 5*l.* per ton, while the "ordinary bran" cost 4*l.* 5*s.* per ton only. The analyses were as follows:—

	Broad bran	Ordinary bran
Moisture	13.03	13.13
Oil	3.69	3.76
¹ Albuminous compounds	15.06	15.94
Starch, fibre, &c.	62.88	62.03
² Mineral matter (ash)	5.34	5.14
	<hr/> 100.00	<hr/> 100.00
¹ Containing nitrogen	2.41	2.55
² Including silica . . . . .	.10	.05

Both samples contained a slight admixture of oats, and the "broad bran" was not as free from cockle-seed and other weed seeds as was the other. Judging from the analyses, the higher price of the "broad bran" is by no means warranted.

8. *Offals.*

The following is an analysis of a sample of thirds sent me, and which I found to have been adulterated with rice-husk:—

Moisture	12.68
Oil	3.62
¹ Albuminous compounds	17.25
Starch, digestible fibre, &c.	55.87
Woody fibre (cellulose)	5.59
² Mineral matter (ash)	4.99
	<hr/>
	100.00

¹ Containing nitrogen	2.76
² Including silica	1.59

In this instance the thirds had been given to pigs, and, shortly after use, several of them were taken ill and had to be killed, subsequent examination showing inflammation of the stomach and bowels.

The admixture was admitted, and a sum of 30% was paid by way of compensation for the losses incurred.

9. *"Oat Feed."*

A sample sold under the above name was sent to me, and gave the following analysis:—

Moisture	8.27
Oil	2.89
¹ Albuminous compounds	5.50
Starch, digestible fibre, &c.	53.57
Woody fibre (cellulose)	24.14
² Mineral matter (ash)	5.63
	<hr/>
	100.00

¹ Containing nitrogen . . . . .	.88
² Including silica	4.03

This was an inferior material, consisting, for the greater part, of the husks, or "shudes," of oats. It was probably the waste from some manufacturing process; and the price at which it was sold, namely, 5*l.* 5*s.* per ton, carriage paid, seems to me to be altogether beyond its feeding value. The husky nature of the material is shown by the high percentage of silica given in the analysis.

10. *Sugar-beet.*

An analysis of a sample of sugar-beet grown in Northumberland in 1910 gave the percentage of sugar as 14.01; this was by no means of high quality, and a considerably higher percentage of sugar may be expected as the result of such a dry season as that of 1911.

The following analyses give the comparative results of samples of sugar-beets and sugar mangolds grown in Bedfordshire in 1911 :—

	Sugar-beets	Sugar mangolds
Water	77.49	90.43
Albuminoids	2.14	1.02
Sugar	15.15	4.81
Crude fibre, &c.	4.23	2.66
Mineral matter . . . . .	.93	1.08
	<hr/> 100.00	<hr/> 100.00

The sugar-mangolds, it will be seen, contained a very high percentage of water and a low amount of sugar. Ordinary feeding mangolds have, as a rule, less water than this, and from 6 to 7 per cent. of sugar.

11. *Acorns.*

The season of 1911 was one marked by a very plentiful supply of acorns, and attention was naturally turned to the utilisation of this material as food for stock, especially in view of the short supply of green-stuff on the farm and the high price of purchased foods.

It has been pretty clearly established that acorns, if given in moderation, will form a useful food. The danger attached to their use arises mainly from the too free feeding with them, and from the inclusion of acorns that have not fully ripened and have been blown down in storms.

Pigs, sheep, and deer would appear to eat acorns with comparative impunity, but for cattle their use is undoubtedly accompanied with risk, and acorns must be given to such in moderate quantities only.

Acorns have been collected in large quantities, ground into meal, dried, and used in conjunction with other foods. The following is an analysis of such a sample of dried acorn meal :—

Moisture	12.47
Oil	3.95
Albuminoids	7.31
Carbohydrates, fibre, &c.	73.48
Mineral matter	2.79
	<hr/> 100.00
Containing nitrogen	1.17

12. *Bastol.*

Within recent times there has been put on the market a material known as "Bastol," and composed of treated wood fibre mixed with molasses. In addition to the above, sold as

"Bastol Meal," there is a cake, composed of the meal with other materials such as earth-nut, rice-meal, &c., the whole being pressed into cake and called "Bastol Cake."¹ Analyses of these products are here given:—

	Bastol meal	Bastol cake
Moisture	17.10	8.68
Oil (ether extract)	1.30	6.04
Albuminoids (N \times 6.25)	2.25	10.12
Soluble carbohydrates and digestible fibre	44.36	45.50
Indigestible woody fibre	30.75	22.67
Mineral matter	4.24	6.99
	<hr/> 100.00	<hr/> 100.00

The original material which forms the base of both "Bastol Meal" and "Bastol Cake" is ordinary sawdust. This is subjected to a process of digesting with acids, and it is maintained that by this process the sawdust becomes to a large extent transformed into other bodies, and loses its hard structure and unpalatable qualities. As the result of the process undergone it is shown that a certain amount of "soluble sugars" are formed, to which a feeding value attaches, and that the remaining fibre is so altered as to become largely capable of digestion, and to be altogether changed mechanically. In the end the material, it is maintained, is capable of forming a feeding material, and is to be so considered. In support of the contention, experiments with straw pulp, conducted in Germany by Dr. Kellner, are put forward as showing that woody fibre thus treated can be utilised by animals.

I should point out, however, that other materials of like nature, *e.g.*, rice-husks ("shudes") have been declared to be "worthless for feeding purposes," within the meaning of the Fertilisers and Feeding Stuffs Act, and, if present in a feeding mixture, their presence must be clearly disclosed at the time of the sale. Yet it could very well be shown that rice-husk, if judged on the standard applied to "Bastol" possesses some feeding properties. Not only does it contain a certain amount of oil and albuminoids, but it can be shown that, under the action of acids and alkalies (which is, in a way, the counterpart of what goes on in the animal), the fibre undergoes partial conversion into digestible carbo-hydrates. So it is with many other materials generally considered as unfit ones for "food," for they would all undergo a certain amount of "conversion" in the animal economy. In fact there is hardly anything that,

¹ "Bastol Meal" is stated to be composed of two-thirds treated wood fibre and one-third molasses.

on the application of such a test, could be deemed to be absolutely "worthless."

This would practically lead to it being impossible to stop any form of adulteration whatever—a state of things certainly not contemplated by the introduction of the Fertilisers and Feeding Stuffs Act.

I venture to express the opinion that what should be looked at is—what was the real intention of the Act? Further, that when the Act speaks of "worthless" ingredients, it does not mean materials which can be shown, by minute analysis or under extreme circumstances, to have some small value, or can at least be taken by animals without doing them harm, but that it means those materials which, *in the broad sense*, are not practical feeding materials, and which a stock-feeder would not knowingly purchase or use for his stock. Could any one contend that a farmer would give his cattle sawdust, or would he be satisfied with the knowledge that because it had been treated by some process or other, it had been converted into a useful "food"? I think not.

In any case, I maintain that if such a material as "treated wood" be sold, or put into cakes, its nature should be clearly disclosed, as required by the Act. The Act does not stop the sale of such articles, but it says "any ingredient worthless for feeding purposes" must be disclosed at the time of the sale. It ought therefore, in my opinion, to be definitely stated, when "Bastol" is used in any form, that the food contains "treated sawdust," or that other words be employed to clearly indicate the nature of the ingredient, and that it should not be allowable to disguise this by "wrapping it up"—as is now done—in such terms as "cooked fibre," &c., which are quite unintelligible to the ordinary farmer. So long as purchasers know exactly what they are buying, I have nothing to say, but they should be in no doubt as to the nature of their purchases.

Another and important feature is the price—6s. per cwt.—at which "Bastol" is sold. Even granting that there be a certain amount of feeding material in "treated sawdust," it is asking too much of one to believe that a material from such a source, when compounded with half its weight of molasses, can have anything like the value represented by the price. In addition, the meal, owing to the presence of resin in the wood (and which is not altogether removed), has frequently a strong and somewhat objectionable flavour. All materials of this kind—if sold at all—should be sold at the prices of waste products, and not those of staple feeding stuffs, and I question much whether farmers would be willing to pay the above price if they knew that what they were buying was merely "treated sawdust" with molasses soaked up in it.

B. FERTILISERS.

1. *Superphosphate.*

This has been uniformly good. A sample sent to me, and guaranteed to contain 30 per cent. of soluble phosphate, cost 51s. per ton delivered in Hampshire. The analysis showed it to have soluble phosphate 31.66 per cent, insoluble phosphates 3.06 per cent., and the material was of very good value, the price working out at 1s. 7d. per unit of soluble phosphate only.

2. *Fish Manure.*

The following are analyses of two samples of fish manure sent me :—

	A	B
Water	22.06	17.86
Organic matter	49.42	41.41
Phosphate of lime	11.27	7.59
Alkalies, &c.	16.31	31.95
Sand . . . . .	.94	1.19
	<hr/> 100.00	<hr/> 100.00
Containing nitrogen	5.92	4.40
equal to ammonia.	7.19	5.34

"A" was guaranteed to contain 8 per cent. of ammonia, and cost—in Kent—6l. 15s. per ton, while "B" was guaranteed to contain 6 per cent. of ammonia, and cost 6l. 5s. per ton. It will be noticed that they both of them came below the guarantee, and I consider them both extremely dear, more especially "B."

3. *Fruit Manure.*

This, which cost 7l. 17s. 6d. per ton in Kent, gave the following analysis :—

	Per cent.
Soluble phosphate	5.46
Insoluble phosphate	22.34
Nitrogen	2.62
equal to ammonia	3.18
Potash	3.88

It came practically up to the guarantee under which it was sold, but must be considered distinctly dear, and 6l. a ton would be an ample price.

4. *Sulphate of Ammonia.*

It is not often that this is found to be of inferior quality, but a sample sent to me, guaranteed to contain 25 per cent. of ammonia, showed only :—

Nitrogen	Per cent
equal to ammonia	19 04
	23 12

It was very wet, and of low quality.

5. "Nitrate Salt."

A material sold under this name in Sussex cost 28s. 6d per ton delivered. The name is a misleading one, for the material contained only a mere trace of nitrate, the equivalent in nitrate of soda being .15 per cent. only. It consisted mainly of common salt, and the price was distinctly high.

6. *Shoddy Manure.*

A sample of this sent me gave the following analysis :—

Moisture	13.77
¹ Organic matter	66.40
Oxide of iron, &c.	4.46
Sand	15.37
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen	3.20
equal to ammonia	3.89

The price was 39s. per ton delivered in Sussex. The material was damp and somewhat lumpy, and it was decidedly dear.

7. *Bird Droppings.*

A sample of this, of which the analysis is given, was called "Guano," but was really the droppings of cage-birds.

Moisture	14.22
¹ Organic matter	75.39
Phosphate of lime	2.78
Alkalies, &c.	1.24
Sand	6.37
	<hr/>
	100.00
	<hr/>
¹ Containing nitrogen	3.35
equal to ammonia	4.07

C. MISCELLANEOUS.

1. *Ground Lime.*

A sample of this, which was stated to be Knottingley lime, costing 14s. per ton there, and which was guaranteed to contain 87.03 per cent. of lime and 3.72 per cent. of silica, gave the following analysis :—

Lime	62.39
Oxide of iron and alumina	11.22
Magnesia, alkalies, &c.	12.58
Silica	13.81
	<hr/>
	100.00
	<hr/>

It will be seen that this was of inferior quality, and much below the guarantee.

2. *Lime Refuse from Water-softening Works.*

A sample of this material gave the following results :—

Moisture	38.86
Water of combination	1.09
Oxide of iron and alumina, carbonic acid, &c.	27.52
Lime	31.84
Silica . . . . .	.69
	<hr/>
	100.00
	<hr/>

Though it was in wet condition, it contained a considerable amount of lime, and, the nominal cost being only 1s. per ton, it might be well worth getting in cases of land requiring lime.

3. *Cement Refuse.*

The following is an analysis of a material sent me to ascertain its value for the liming of land :—

Moisture	1.44
Loss on heating	4.63
Oxide of iron and alumina	4.54
Lime . . . . .	.27
Magnesia, &c. . . . .	.36
Insoluble siliceous matters	88.76
	<hr/>
	100.00
	<hr/>

This was not really cement, but practically only siliceous matter containing very little lime indeed. Its cost, 15s. per ton, was much above its value, and the material was agriculturally worthless.

4. *Hops containing Arsenic.*

A sample of hops was sent to me to examine for arsenic, the statement being made that their purchase had been refused in consequence of their containing arsenic. This allegation I found to be quite warranted, inasmuch as examination of the sample showed it to contain over $\frac{1}{2}$ grain of arsenic per lb.

List of samples analysed on behalf of Members of the Society during the twelve months December 1, 1910, to November 30, 1911 :—

Linseed cakes	24
Undecorticated cotton cakes	34
Decorticated cotton cakes	5
Soya bean cake	5
Compound feeding cakes and meals	46
Cereals	20
Rice meal	2
Bean and pea meals	2
Dried grains	2
Superphosphates	18
Dissolved bones	4
Compound manures	21
Raw and steamed bones	16
Peruvian guanos	8
Fish, meat, and bone guanos	5
Basic slag	22
Nitrate of soda	7
Sulphate of ammonia	7
Potash salts	8
Shoddy	28
Refuse manures	1
Lime	4
Roots	2
Hops	1
Waters	83
Soils	24
Milk, cream, and butter	17
Sewage sludge	1
Rape cake manure	3
Castor meal	1
Sulphate of copper	1
Miscellaneous	17
Total	439

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ANNUAL REPORT FOR 1911 OF THE BOTANIST.

THE total number of inquiries dealt with in the Botanical Department between November 30, 1910, and November 30, 1911, amounted to 420 as against 360 in the preceding twelve months.

The majority of these were concerned with the germination and purity of agricultural seeds. Thirty-seven specimens of weeds and about a dozen specimens of grasses were sent for identification. Fungoid diseases of farm crops, fruits, and a few ornamental plants accounted for forty inquiries. General inquiries, including such subjects as the formation and renovation of pastures, the poisonous nature of various plants, the suitability of certain varieties of wheat and barley for particular districts, the value of acorns for feeding, &c., numbered about fifty. A few inquiries were received from the Colonies. These for the most part were requests for samples of various kinds of farm seeds or for information where reliable stocks of the seed of our common agricultural crops could be obtained. Samples of seeds were also received for testing from the Government Biologist of New Zealand in order that the results obtained by our methods might be compared with those obtained by the methods in use in that country.

PURITY AND GERMINATION OF SEEDS.

The inquiries made by Members of the Society necessitated making 180 complete analyses, either in duplicate or triplicate, in order to determine the real value of the samples submitted for testing. Two hundred and five samples were examined for purity: many of these were received about sowing time with the request that an immediate reply should be sent as to whether the seed was of sufficiently good quality for planting. Whilst the hurried examination which can be made under such conditions is not altogether satisfactory, it is often better to adopt this course than to sow untested seeds, for besides determining the purity one can often say whether the germination of such seeds as those of the clovers and some of the grasses is likely to prove good or bad.

The quality of the seeds which have been tested has, on the whole, been good, and I have only had to condemn two samples as being unfit for planting. Both of these were clovers. One, a sample of Broad Red clover, contained nearly 50 per cent. of such impurities as docks, geranium, plantain, and campion. On inquiring as to its source I was told that it was bought from a farmer who had saved a clover crop for seed,

but evidently had made no attempt to clean the seed after threshing. To sow such rubbish is a highly efficient method of obtaining land overrun with docks. The second sample—sainfoin—was badly contaminated with its usual impurity, burnet, and moreover failed to germinate 20 per cent. To secure a full plant from such seed would have entailed sowing nearly ten times the usual quantity per acre. A third exceedingly bad sample was sent too late in the season for the germinating tests to be of any assistance. This was a small quantity of a new wheat which had failed to make a satisfactory plant, though another variety sown in the same field at the same time had grown perfectly. Under laboratory conditions it germinated 22 per cent. as against the 5 per cent. the Member estimated that it grew in the open field.

The following table shows the average purity and germinating capacity of those kinds of seeds submitted in sufficiently large numbers to give reasonably representative results :—

	Purity per cent	Germination per cent
Red clover .	99	91
White clover .	98	88
Alsike .	97	97 5
Trefoil .	99 5	88
Perennial rye grass .	98	85
Italian rye grass	95 3	90 5
Timothy .	97 6	88 5
Cocksfoot .	89	91
Meadow fescue	97	92
Tall oat grass	90	90
Mangold	100	115

The figures indicate that the agricultural seeds now supplied are satisfactory. I believe, though, that most of the seeds tested have been obtained from the larger seed merchants, and that the average results would be distinctly lower if samples representing the seeds supplied by small local dealers and corn merchants were available for analysis. This applies more especially to grass and clover seeds, which require elaborate machinery to clean them effectively. The English and Continental samples of clover seeds tested have proved to be cleaner than in former years, and dodder was completely absent from all but two samples. Chilian clover seed, on the other hand, generally contained the large seeds of Chilian dodder, which appear to be difficult to separate completely. The average content of hard seed in the four clovers in the above list was 5·8 per cent.

The most striking feature of the inquiries concerned with seeds was the effect of the abnormally dry season on the germination of swede and mangold seed. In many parts of the country these were sown on unusually dry seed beds. A small percentage germinated at the usual time, but the bulk only started to grow when rain fell. Some Members considered that these two distinct periods of germination indicated a mixture of old and new seed, but where some of the original seed was still available for analysis it was found to germinate uniformly under suitable conditions.

Few of the inquiries with regard to weeds were of any general interest. *Lepidium draba*, stated to be spreading in the south of England in the last Report, was received from Essex, where it also appears to have obtained a hold in hedge-rows and arable land. *Elodea canadensis*, the American water weed, was sent from two localities. In one it had spoiled the fishing in a series of trout ponds; in the other its growth was so abundant that the watercourses on the farm were partially blocked, and could only be kept sufficiently open by repeatedly cutting the weed. No really satisfactory methods for dealing with it are known, but fortunately it generally disappears more or less completely after a few seasons' growth. The Dyer's genista (*Genista tinctoria*) was received from three widely separated districts, and in each case reported to be ruining valuable pastures. Stock rarely graze this weed, and consequently it sets seed freely, and under suitable conditions may almost monopolise the ground. If mown whilst flowering it can generally be exterminated without much difficulty. The common spurrey (*Spergula arvensis*) was sent in on several occasions, with the report that it was one of the worst weeds of light arable lands. Its seeds, as a rule, before the corn crop can be harvested, and much of the seed does not germinate till late in the following spring. If sprayed with a 2—4 per cent. solution of copper sulphate whilst still young the weed can be eradicated. The application of lime to the soil frequently gives satisfactory results also. Bracken (*Pteris aquilina*) was twice reported as spreading seriously. Attempts should be made to suppress this weed as soon as its presence is noticed in pastures. If allowed to spread it soon covers a large area and spoils the land for feeding purposes. The only satisfactory method of dealing with it is to mow the shoots off repeatedly, never allowing any to expand. Two seasons' treatment will generally cripple the weed, and little trouble will be incurred in keeping it under the following year. A dressing of basic slag is then often of value.

The fungoid diseases of plants were of more interest than usual. One of the results of the abnormally dry season was

the almost complete lack of potato disease (*Phytophthora infestans*), of which not a single specimen was sent in to the Department. Wheat rust (*Puccinia glumarum*) was also far less common than normally. On the other hand the mildews appear to have been especially abundant throughout the summer and autumn, for nearly half of the diseases sent in for determination were caused by these parasites. They included six cases on swedes, three on wheat, three on apple foliage, two on barley, two on peaches, one on hawthorn, and one on oak. Apple scab (*Fusicladium dendriticum*) also appears to have been very prevalent.

A Member in Norfolk who sent specimens of mangolds in the previous year bearing tumour-like outgrowths again forwarded specimens, and it was possible to make a more detailed examination of the disease. There is now no doubt that it is the crown gall, caused, as Erwin Smith has proved lately, by *Bacterium tumefaciens* (Bull. 213, Bureau of Plant Industry, Washington). A partial description of the disease has also been given in the Journal of the Board of Agriculture (Vol. 17, page 830).

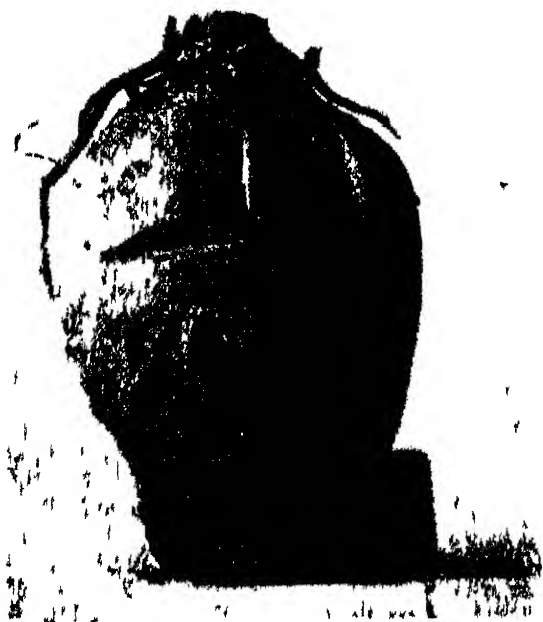
The disease may possibly prove serious, as it is capable of attacking an unusually wide range of plants, such as sugar-beet, hops, chrysanthemums, vines, roses, and apples. It appears to be fairly common on the Continent on sugar-beets. At present it is not generally distributed in this country, and the only outbreaks I have been able to trace with certainty have occurred in Norfolk and Shropshire. In each case there is some evidence to show that the introduction of Continental sugar-beet seed has been responsible for its presence.

If infected plants are destroyed, preferably by burning, as soon as the symptoms of disease are noticed, it should be possible to prevent it from obtaining a hold in the country. The illustration will show these characteristic symptoms with sufficient clearness. The outgrowths are at first firm and have much the same texture and markings as the mangold itself. As the roots mature, and particularly when stored, the mass becomes darker and not unlike water-sodden peat. Apart from this, however, such roots keep fairly well.

A somewhat similar disease was received from a correspondent in Cambridgeshire. In this case the roots of raspberries were attacked, and striking bead-like tumours produced. Microscopic examination showed no signs of fungus hyphæ in the tumours, but ultimately bacteria were found in their woody-diseased tissue. Whether these are identical with *Bact. tumefaciens* can only be decided by infection experiments next season.

An unusually bad example of the corky scab of the potato (*Spongospora scabies*) (see Journal R.A.S.E., Vol. 71, 1910, page 314) was received from Leicestershire. The Member sending it stated that half of the tubers in the bulk he had purchased for seed were attacked.

Another disease of some interest sent from the Wisbech fruit-growing district, was plum rust. This had attacked several varieties of plums, Czars being particularly badly infected. As a result the foliage was shed prematurely, and the trees were practically bare at the time when the crop began



Mangold root with crown gall

to ripen. The greater portion of the fruit fell before it was mature, and what remained was leathery and unmarketable. I have had several opportunities of observing the disease in the past two seasons and can confirm the account given by my correspondent. This rust produces two spore stages on the plum and a third spore stage on the garden anemone (*A. coronaria*). The leaves of this latter host plant are attacked in the early spring. They usually become somewhat elongated and bear narrower segments than normally, on which numbers of yellow cluster cups are produced. The spores from these,

if they come into contact with the young foliage of the plum, infect it, and rust-spores are produced in about a fortnight's time. Apparently the disease persists from year to year in the forms of the anemone, for wherever I have planted specimens known to be diseased in the former season the disease has always broken out afresh. Probably the plum rust can be suppressed by simply destroying infected anemone plants, and so breaking the life-cycle of the fungus.

Two distinct bacterial diseases of the potato have been received, and are still under examination. One of them produces a characteristic discolouration of the veins and wrinkling of the leaf blade, the other causes the foliage to wilt and the haulm to decay. They are at present of little economic importance.

During the course of the year reports have been received of two cases of cattle poisoning and one of horse poisoning by noxious plants. In one of the cases of cattle poisoning the animals ate quantities of the young foliage of the shrub *Andromeda japonica*, a plant not uncommonly met with in shrubberies. Several species belonging to this natural order are known to be poisonous, but this is the first case which has been brought to my notice of *A. japonica* proving dangerous in this country. Evidently care should be taken to plant it only in situations to which cattle cannot obtain access. The second case where cattle died, and that in which a horse was stated to be poisoned, are more difficult to account for satisfactorily. In each case the veterinary surgeons attributed death to the effects of eating poisonous plants. Hemlock was specifically mentioned in the first instance, "some poisonous plant" in the second. In the one case hemlock could not be found when the pastures were examined, and though such poisonous plants as dog's mercury and cuckoo pint were present in the second case, there were no signs of these having been grazed. In fact it is questionable whether enough was present in the fields to cause poisoning, even if the whole of it had been eaten.

Early in the year the common chickweed was received from three localities, in each case in connection with outbreaks of sickness amongst sheep, which were attributed to its presence amongst roots. This weed often makes a considerable growth after the final cleaning of the crop, but it is very questionable whether it has any poisonous properties.

Over twenty inquiries as to the best methods of forming and renovating permanent pastures and lawns have been dealt with. This is perhaps the most difficult form of inquiry the Department has to deal with, for soil conditions often differ so much from what one might expect from an examination of

geological maps, that one can rarely be sure of the type of soil to be dealt with. Moreover it is difficult to describe soils with sufficient accuracy for the purpose. Members requiring assistance of this nature should, wherever possible, send either a turf cut from an adjoining field or a bunch of flowering specimens of all the grasses that can be found in it. Either of these afford sufficient indication of the grasses which will grow in the locality, and suitable prescriptions can then be drawn up economically. Representative turves cut from fields requiring treatment will also afford much useful information as to the desirability of draining or applying lime, slag, or other artificial manures.

At the beginning of the year 1911 a grant of 50% was made to the Botanical and Zoological Committee to help defray the expenses of an examination of the micro-flora of certain of the Woburn plots. The investigations are being carried out in the laboratories at the School of Agriculture at Cambridge. Bacteriological analyses have so far been made of the soils of the tare and mustard plot, and of the ammonium sulphate plots, with and without lime. A detailed study of the fungi present in the latter plots is also being made, particularly with reference to the effects of their presence on the total nitrogen content of the soils.

Investigations on the flora of each of the manurial plots are being continued.

R. H. BIFFEN.

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ANNUAL REPORT FOR 1911 OF THE ZOOLOGIST.

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THE unusual weather conditions of the past season had a marked effect on the work of the Zoological department. During the spring and early summer complaints of insect attack were very frequent. In June alone the applications for advice referred to about thirty different pests, several of them occurring

widely. Later on the reports were less numerous than usual, the explanation probably being, not that pests were absent, but that several crops had suffered so severely from lack of rain that there was little reason to inquire into any further cause for their failure, the presence or absence of injurious insects being of comparatively little account.

Several of the pests inquired about possessed considerable interest, especially among those injurious to forest trees, but it was unfortunate that in some cases the attack was only reported in its last stages, when material was scanty and there was no possibility of obtaining certain evidence of the insect at work, or of treating it effectually. All that could be done was to note such facts as might be useful in investigation if they chanced to recur next season. Experiments have been made in the treatment of big bud disease in black currants, and the attempts to clear up obscure points in the life-history of the raspberry beetle have been continued.

Many insects have been sent for identification. Several of the applications for advice concerned the occurrence of various creatures in the water to which cattle and horses had access, and also pests of various sorts infesting houses and farm buildings or attacking stored produce, while some cases of parasitic attack on domesticated animals were reported.

Most of the ordinary farm and fruit pests have been inquired about from time to time, and among the cases reported a few were of unusual character, as, for instance, the occurrence of the grub of the garden chafer in large quantities in pasture land, and a crop of vetches suffering severely from an attack of black fly.

FOREST TREE PESTS.

Among the pests reported as injuring forest trees may be mentioned spruce or larch chermes, *Chermes corticalis* on Weymouth Pine, beech coccus, pine bud-moth, pine saw-fly, pine weevil, wood-wasp (*Sirex*), goat-moth, and elm-bark beetle. These attacks presented no feature of special interest.

Two rather severe attacks of willow beetle on osiers were among the cases reported. This insect is injurious both in the larval and adult stages, and greatly damages osiers, not only by destroying the leaves, but by frequently eating the terminal bud and thus stunting the plants. It is best treated by making war upon the beetles in the adult stage—shaking the osiers over tarred boards or vessels containing paraffin while the beetles are at work, though some benefit is derived from spraying with an arsenic mixture.

The winter is passed in the adult form, under loose bark, or in crannies of the bark of various trees—poplar, ash, &c.

Winter washing of the trunks of trees in the neighbourhood of osier attacks would probably do something to reduce the numbers of this pest.

A very mysterious case of an insect attack on Douglas Fir was reported from Herefordshire by Mr. Percy Rogers, agent to Mr. Chas. Coltman Rogers, of Stanage Park, Radnorshire. The firs had been planted in an open space in a wood, but in close proximity to some hard wood and other trees, oak, sycamore, hornbeam, mountain ash, scots pine and spruce, and were from eight to twelve feet high. At the end of May the tops became enveloped in web of caterpillars which were feeding on the needles. The attack was almost over, and the trees practically destroyed, when this information was received, and there was little material to be obtained. In what was sent, several caterpillars were found, but one—a geometer caterpillar—was the most numerous, and apparently the chief culprit. The specimens when they arrived were far from lively, and the chance of breeding any of them out into moths seemed slight. Specimens had also been sent to Kew and to the Board of Agriculture, but no success has attended efforts to obtain the mature insect, and the species remains unknown. The only geometer caterpillar which is known to feed on conifers—except those of the winter moth group—is *Fidonia pinivaria*, but the caterpillars in question certainly did not belong to that species. The presence of numerous “looper” caterpillars spinning up the top of the fir-trees seems to be a phenomenon which has not previously been recorded, and it is very unfortunate that its identification was not possible. Another interesting attack was reported on hollies. With the exception of the leaf-mining fly *Phytomyza ilicis*, holly trees are usually remarkably free from insect pests. In the case under consideration the terminal shoots were being destroyed by small caterpillars which spun the leaves together, and the work seemed to be precisely that described by Gillanders as due to a small *Pædisca* moth. Some of the caterpillars pupated and moths were obtained, but they proved not to be *Pædisca*, but *Peronea hastiana*, which appears to be unknown as a holly pest.

CORN AND GRASS PESTS.

There were inquiries after all the ordinary corn pests:—Frit fly and tulip root in oats, gout fly in barley, wheat-bulb fly and wheat midge in wheat, and “leather-jacket” and wireworm in various crops. The only case in this section that was at all remarkable was the occurrence of the grubs of the garden chafer, *Phyllopertha horticola*, in pasture land. The summer chafer, *Rhizotrogus solstitialis*, is commonly

injurious to grass land in the larval state, but the garden chafer is generally most injurious as a beetle, when it destroys the leaves of various trees. Complaints of injury by it in the grub stage are seldom received.

GENERAL FARM AND GARDEN CROP PESTS.

In this section many cases of attack were reported. Root-crops suffered from aphis, gall-weevil, root-fly maggot, millipedes and surface caterpillars, and there were several complaints of mangold fly. Onion fly was prevalent, and root-knot eelworm was the cause of failure in cucumbers, and was also found in some garden plants sent for examination. There were bad attacks of black fly on beans, and in one case the same pest destroyed a field of vetches. Pea-thrips was again troublesome in garden peas, though not to so great an extent as in some previous years.

Several cases of lettuce plants attacked by root-aphis were noted, but the dry weather seemed to be the chief factor in the failure of this crop, which rapidly improved on the advent of rain.

Some caterpillars found attacking hops proved to be those of the Peacock butterfly. Its ordinary food is the stinging nettle, to which the hop plant is allied.

A case was reported in which nearly all the charlock plants on a farm were infested by the cabbage gall weevil. It brought out very clearly the importance of keeping down a weed so likely to harbour the pests of cruciferous crops.

ANIMAL PARASITES.

The cases of parasitic diseases of animals brought to the attention of the Zoologist were not numerous, the principal being "Gapes" in fowls, and intestinal worms (*Strongylus paradoxus* and *S. contortus*, &c.) in pigs and sheep. Several animal parasites, especially ticks, were sent for identification.

FRUIT PESTS.

Advice has been given with regard to many fruit pests including numerous aphida, apple sucker, mussel scale, red spider and winter moth.

A very bad attack of garden chafer was reported, an orchard being entirely defoliated and the crop lost. This is an unusual occurrence, for this beetle is not as a rule regarded as a serious pest, though often more or less of a nuisance in the garden, where the grubs live at the roots of a great variety of plants and the beetles strip the leaves from all sorts of trees.

Its omnivorous habits make it a difficult pest to deal with for it is impossible to know where to look for the grubs, and the only measure is to make war upon the beetles, which may be caught and destroyed in great numbers by beating them down from the trees. It is probable that a prompt spraying with an arsenic wash would have a beneficial effect.

As usual, "big bud" in black currants has been often inquired about. As far as can be seen the exceptionally dry summer has been inimical to this pest, for diseased bushes are not now harbouring nearly as many mites as is generally the case. Sulphur and soft soap spraying experiments have been carried out during the past season both by the department and by Members to whom it has been recommended, and though it will be impossible to report conclusively until next year, the plants treated seem to have distinctly benefited. It is a troublesome treatment, for it is no use applying it except when the mites are migrating, and this is precisely the time when spraying is otherwise undesirable, for the plants are then flowering and fruiting. The crop is necessarily damaged to some extent but this would be willingly endured if the disease could be eradicated, as it appears to have been in some cases.

A correspondent states that he found that on experimentally painting some diseased buds with vaseline the mites within were all killed. The eggs, however, survived, and in the case of such buds as were not too severely attacked to open, mites which had crawled out to emigrate were found later adhering to the vaseline.

The raspberry beetle *Byturus tomentosus*, has again been under observation with a view to determine more accurately its life history, which presents several obscure points, notably the early appearance of the beetle, which we have found in the soil in February, the occurrence of larvæ in the soil in April, and the difficulty we experience in obtaining the pupal stage at all.

This year several attempts were made to rear the insect from infested fruit in the laboratory, but we were not successful in preventing the fruit from drying up and becoming inedible, and the grubs died. Rather more success attended a repetition of the experiment of last year, when a number of infested bushes were imprisoned in an experimental cage. On examination in August no pupæ were found, but a few of the grubs or larvæ were discovered some inches below the surface of the soil. These were removed to the laboratory with the idea of making a further investigation of the experimental cage when the removed grubs should have pupated, but up to the present time (November) they remain in the larval state. So far we have not come across a single pupa or chrysalis.

MISCELLANEOUS PESTS.

Advice has been given in many cases where buildings have been infested by various creatures. A common example is the furniture beetle, *Anobium domesticum*, the usual cause of "worm-eaten" furniture and wooden fixtures in the house. If "sawdust" continues to trickle from the borings the pest is still active and is a source of danger to all the wood work, and measures should be taken to destroy it. The simplest plan is to paint with a 2 per cent. solution of corrosive sublimate.

A remarkable case was reported in which some sheet lead fully an eighth of an inch thick was perforated like a sieve by these beetles, presumably in their efforts to attain the underlying wood.

Ants are sometimes a great nuisance in the house, and one case that was brought to the attention of the Zoologist was worth noting. A considerable amount had been expended in structural alterations to exclude these insects which had forced their way into a house through double walls with a considerable space between, the mortar being perfectly riddled by their borings, but they still continued to enter. A plentiful use of naphthalene in those parts of the house that they affected cleared them all out in the space of a few hours, and the plague has not recurred.

There is, however, a very minute ant, *Monomorium pharaonis*, which has been imported into England comparatively recently and which lives only in houses, and as it establishes itself in places often very difficult to get at, it is exceedingly troublesome to eradicate. The only plan is to attempt to locate the nest and to destroy it by fumigation with sulphur. The wingless workers are not more than one-twelfth of an inch in length.

In connection with the common cockroach or "black beetle" a curious observation was made during the past summer. A house became infested and numbers of the insects were caught in traps. It was then noticed that they seemed to come from one particular hole. This was stopped, and the plague ceased. Ordinarily, when cockroaches obtain entry into a house they establish themselves and breed in chinks of the flooring or behind wainscoting, but in this case they simply entered the house in search of food and departed again, and as soon as the entrance passage was closed no further trouble was experienced. Possibly the unusually warm weather counteracted their desire for indoor shelter.

Some cases were reported of the infestation of rooms by mites. Generally there was some obvious source of the attack, such as the close neighbourhood of a hayloft, but the expulsion of these creatures is often a troublesome matter.

The very remarkable "rat-tailed" larva of *Eristalis tenax* have often been sent for identification as occurring in stables, and being possibly injurious to horses or cattle. These flies are harmless but their grubs live in liquid manure or filthy water. The mature insects much resemble bees, and are believed to have given origin to the very ancient myth that bees could be procured from filth or decaying carcasses.

Sometimes the minute "water fleas" (*Podura aquatica*) have caused alarm by occurring in vast numbers on water to which cattle has access. Though themselves harmless, they no doubt indicate an undesirable degree of foulness in the water on which they occur, and on the scum of which they feed. A more unusual cause of alarm proved on examination to be caddis worms, which were suspected of possibly injuring the cattle which drank the water containing them. These insects, however, thrive in perfectly clear water and are entirely harmless.

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THE WOBURN EXPERIMENTAL STATION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

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FIELD EXPERIMENTS, 1911.

THE season 1911 was one of very exceptional nature, a prolonged drought such as that which characterised the summer of 1911 not having been experienced for many years.

In many ways this was a benefit to heavy land, and resulted in the production, on such land, of exceptionally good corn crops, but on light sandy land, such as that at Woburn, the drought was very severe in its effects. This was more

particularly the case where corn crops, such as wheat and barley, had been grown year after year on the same land.

Whereas the season of 1910 was marked by an almost sunless summer, in 1911 there were almost nothing but sun and heat from May to September.

The rainfall at Woburn for the entire year amounted to only 19.24 in., as against the 26.82 in. recorded in 1910. In April there were eleven rainy days; in May, ten; in June, eleven; in July, three; and in August, ten; the rainfall for these five months reaching, in all, only 5.23 in., whereas in the corresponding months of 1910 the total rainfall was 10.37 in. In the month of July, 1911, only .37 in. of rain fell, and in August .99 in.

Such a season as that of 1911 was in one way beneficial, even on light land, inasmuch as it gave excellent opportunities for cleaning the land. The hay crop, though short, was of excellent quality, and was exceptionally well "saved," though, subsequently, the pastures presented a brown and "burnt-up" appearance.

By means of early sowing, and then by keeping the land constantly stirred, and thus obtaining a fine tilth, fair crops of mangold and sugar-beet were obtained, but other root crops suffered greatly.

CONTINUOUS GROWING OF WHEAT (*STACKYARD FIELD*) 1911 (35TH SEASON).

No alteration in the system of manuring was made during this season, the small dressing of 5 cwt. per acre of lime on plot 2aa given in 1910 not being repeated.

The land was ploughed September 21-30, 1910. Farmyard manure (giving 100 lb. ammonia per acre, as ascertained by actual analysis) was ploughed in on plot 11b on September 29. Wheat, "Square Head's Master," at the rate of 9 pecks per acre, was drilled on all the plots on October 15, mineral manures being applied on the same day to the different plots that were to receive them.

The wheat came up very well, and, early in the next year (1911), the farmyard manure plot (11b) looked decidedly the best.

There was some frost early in February, and snow about March 14. The winter, however, was of an open character.

On March 9, rape dust was applied to plot 10b and sulphate of potash to plot 11a. Already at this period a difference, not noticed before, had begun to show itself between the plots 3 and 6, the former, which had not received any mineral manure, looking decidedly the darker and stronger. The top-dressings of nitrogenous manures were applied, the first halves on May 2,

and the second halves on May 16. By June 12 the wheat was in ear, and then followed the prolonged drought previously referred to. Plots 2a, 8a, and 8b, on which ammonia salts, without lime, had been continually given, showed hardly any crop, while plot 5a, similarly treated, was also dying off. On the contrary, plot 2b, on which lime had last been applied in December, 1897, was still showing well, as also did the small application of lime given to plot 2aa. The farmyard manure plot (11b) looked much better than the rape dust one (10b), while a striking superiority was shown by plot 11a (on which sulphate of potash had been used) over plot 10a (without potash, but with superphosphate in its place).

Quite as noticeable as in 1910 was the presence of coltsfoot on the mineral manure plot (4), the growth of this weed being, as then, mainly confined to this particular plot.

The wheat was cut on August 1, carted on August 9, and threshed on November 15. The harvest results are given in Table I., page 390.

The results, as was to be expected in such a dry season as that experienced, were decidedly low. The unmanured plots gave, on an average, 8.2 bushels per acre, mineral manures alone rather less than this, namely, 7.1 bushels. Sulphate of ammonia used alone or with minerals, but without lime, gave either no crop or only a bushel or two, but, when used with lime, produced fair results. Thus, plot 2b, which last had 2 tons of lime per acre in 1897, and had thus had fourteen successive crops of wheat taken off it, still produced 12.6 bushels. Even in the case of plot 2aa, where small doses of 5 cwt. per acre of lime had been given in three separate years, as much as 19.1 bushels of wheat were obtained, this result being a better one than that given by plot 2bb, on which a second dressing of 2 tons per acre of lime had been applied in 1905. On plot 5b, from which, since the application of 1 ton of lime per acre in 1905, seven crops had been taken, 15.1 bushels of wheat were obtained.

On the plots 8aa and 8bb, where only 10 cwt. per acre of lime had been given in 1905, evidence was forthcoming as to the lime having been, by now, practically worked out. In regard to nitrate of soda, the striking feature was that, in a dry year such as that experienced, the lighter dressing of nitrate of soda (plot 3b) gave as good a return as the heavier one (3a), except so far as the straw was concerned. Also it is remarkable that the produce of these plots, where nitrate of soda was used alone, was greater than that of plot 6 where superphosphate had been used in conjunction with it. Indeed, the highest produce for the year (21.8 bushels) was given by plot 3a, which received nitrate of soda alone, the next highest yields being those of the

TABLE I.—*Continuous Growing of Wheat, 1911*
(35th Season).

(Wheat grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.	Value per quarter on basis of 3½s 6d	
		No of bush.	Weight per bushel	Weight			
1	Unmanured	7.7	Lb. 63	Lb. 10	C. q. 1b 6 1 20	s. 35	d. 0
2a	Sulphate of ammonia (=25 lb. ammonia)	1.4	60	8	2 0 22	34	6
2aa	As 2a, with 5 cwt. lime, Jan., 1905, repeated 1909 and 1910	19.1	63	16	13 3 20	35	6
2b	As 2a, with 2 tons lime, Dec., 1897	12.6	64	12	10 1 0	35	0
2bb	As 2b, with 2 tons lime (repeated), Jan., 1905	10.6	62	12	8 0 24	34	6
3a	Nitrate of soda (=50 lb. ammonia)	21.8	59	59	18 0 14	33	6
3b	Nitrate of soda (=25 lb. ammonia)	21.6	61	30	16 1 18	31	0
4	Mineral manures (superphosphate, 3 cwt.; sulphate of potash, ½ cwt.)	7.1	63	7	6 1 25	34	6
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia)	7.8	64	10	6 3 8	35	0
5b	As 5a, with 1 ton lime, Jan., 1905	15.1	63	12	10 3 8	35	6
6	Mineral manures and nitrate of soda (=25 lb. ammonia)	17.3	61	22	14 0 14	34	6
7	Unmanured	8.7	63	8	7 2 1	35	0
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia)	2 1 ¹	56	12	2 3 18	31	6
8aa	As 8a, with 10 cwt. lime, Jan., 1905	12.7 ¹	63	20	8 3 16	35	0
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years).	1.3 ²	60	8	2 0 1	31	6
8bb	As 8b, with 10 cwt. lime, Jan., 1905	5.3 ²	64	8	5 1 24	35	6
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia)	15.5 ¹	62	16	12 3 12	35	6
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years).	9.7 ²	61	8	8 0 4	35	0
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia)	17.2	62	14	14 3 1	35	0
10b	Rape dust (=25 lb. ammonia).	18.7	63	10	15 3 10	35	6
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia).	20.2	61	12	17 3 6	34	6
11b	Farmyard manure (=100 lb. ammonia)	20.2	62	14	18 1 20	35	6

¹ Applied.² Omitted.

TABLE II.—Continuous Growing of Barley, 1911
(35th Season).

(Barley grown year after year on the same land, the manures being applied every year.)

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn		Tail corn	Straw, chaff, &c.	Value per quarter on basis of 36s.	
		No. of bush.	Weight per bush.	Weight		s.	d.
1	Unmanured	3·8	Lb. 50	Lb. 29	C. q. lb. 3 3 25	31	6
2a	Sulphate of ammonia (=25 lb. ammonia)	—	—	—	—	—	—
2aa	As 2a, with 5 cwt. lime, Mar., 1905, repeated 1909 and 1910	5·5	50	40	5 1 20	31	6
2b	As 2a, with 2 tons lime, Dec., 1897	3·6	50	40	3 1 8	31	0
2bb	As 2b, with 2 tons lime (repeated), Mar., 1905	2·3	52	16	3 0 24	31	6
3a	Nitrate of soda (=50 lb. ammonia)	3·8	50	14	3 0 26	30	0
3b	Nitrate of soda (=25 lb. ammonia)	1·7	50	12	2 3 12	30	0
4	Mineral manures (superphosphate 3 cwt., sulphate of potash $\frac{1}{2}$ cwt.)	7·5	48	29	5 2 21	35	0
5a	Mineral manures and sulphate of ammonia (=25 lb. ammonia)	—	—	—	—	—	—
5aa	As 5a, with 1 ton lime, Mar., 1905	3·6	52	16	7 0 24	31	0
5b	As 5a, with 2 tons lime, Dec., 1897	3·7	52	14	5 1 6	32	0
6	Mineral manures and nitrate of soda (=25 lb. ammonia)	4·1	49	31	5 2 15	30	0
7	Unmanured	1·4	50	11	2 2 15	31	0
8a	Mineral manures and (in alternate years) sulphate of ammonia (=50 lb. ammonia)	—	—	—	—	—	—
8aa	As 8a, with 2 tons lime, Dec., 1897	4·0 ¹	50	44	4 3 12	30	0
8b	Mineral manures, sulphate of ammonia (=50 lb. ammonia) omitted (in alternate years)	—	—	—	—	—	—
8bb	As 8b, with 2 tons lime, Dec., 1897	4·8 ²	50	40	4 0 8	30	0
9a	Mineral manures and (in alternate years) nitrate of soda (=50 lb. ammonia)	6·2 ¹	50	34·5	8 2 16	32	0
9b	Mineral manures, nitrate of soda (=50 lb. ammonia) omitted (in alternate years)	3·7 ²	50	32·5	3 0 2	35	0
10a	Superphosphate 3 cwt., nitrate of soda (=25 lb. ammonia)	2·5	50	16	6 1 0	31	6
10b	Rape dust (=25 lb. ammonia)	4·2	50	30·6	4 0 24	31	0
11a	Sulphate of potash 1 cwt., nitrate of soda (=25 lb. ammonia)	6·2	50	47	9 2 10	30	0
11b	Farmyard manure (=100 lb. ammonia)	26·7	49	122	15 2 12	34	0

¹ Applied.² Omitted.

farmyard manure plot (11b), and of plot 11a, where sulphate of potash had been used. It would appear from this latter result that the need of potash is beginning to tell on this land. Rape dust (plot 10b) did not do as well as farmyard manure, this latter giving 20·2 bushels.

The different samples of corn were valued, as usual, by Mr. T. Smith, junr., of Bedford, on January 24, 1912. The basis of comparison for the year was taken as 35s. 6d. per quarter of 504 lb. at Ridgmont Station. The better samples, among which were those grown with rape dust and with farmyard manure, just came up to this figure, and were described as "useful wheats for the season's growth, condition good, and with plenty of strength."

The usual features of inferior value, low weight per bushel, and high amount of tail corn, when nitrate of soda alone was used (plots 3a, 3b), were again shown.

CONTINUOUS GROWING OF BARLEY (*STACKYARD FIELD*), 1911 (35TH SEASON).

The land was cleaned and prepared during the winter of 1910. Farmyard manure, giving 100 lb. ammonia per acre (as ascertained by analysis), was ploughed in on March 4, 1911, and on April 10, 9 pecks per acre of "Goldthorpe" barley were drilled over the whole of the area. Mineral manures were at the same time applied to the plots to receive them, and rape dust spread on plot 10b. The barley came up quite well. The nitrogenous top-dressings were applied, the first halves on May 16, the second halves on May 26. From this time, however, the barley hardly seemed to grow at all, and the want of rain was most severely felt, there being not sufficient even to wash in the soluble salts such as nitrate of soda and sulphate of ammonia, these remaining visible on the surface for a considerable time after their application. As a consequence of this, the different plots, with one exception, looked very poor, and but small yields were ultimately obtained. The one exception was the farmyard manure plot (11b), which was in striking contrast to all the others, the dung preserving in the soil the necessary moisture, and thus acting in a way that none of the artificial manures could imitate.

Plot 4 (minerals only) showed the same peculiarity with regard to the presence of the weed "horse tail" that was noticed in 1910. The sulphate of ammonia plots, 2a, 5a, 8a, and 8b were practically destitute of crop, while on 2b the influence of the lime applied fourteen years previously had obviously disappeared. The small dressing of 5 cwt. per acre of lime, given in three different years, however, afforded a certain amount of crop, and this plot looked better than

did either 2b, already referred to, or even 2bb, upon which the dressing of 2 tons of lime per acre had been repeated in 1905.

The crop was cut on August 10, and then carted, being ultimately threshed on November 15. The results are given in Table II., page 391.

If the wheat crop suffered through the exceptional season, the barley did very much more so, and, indeed, there has hardly ever been so poor a crop obtained in the course of the experiments. One of the two unmanured plots gave 3·8 bushels, the duplicate, for some unexplained reason, yielding only 1·4 bushels.

Mineral manures (plot 4), in spite of the prevalence of weeds, gave rather more, namely, 7·5 bushels.

The sulphate of ammonia plots, when this was used alone, gave, as stated, no crop whatever, but plot 2aa, where as little as 15 cwt. per acre of lime had in all been applied, produced 5·5 bushels, as against 3·6 and 2·3 bushels on plots 2b and 2bb, where 2 tons and 4 tons respectively of lime had been previously applied. The failure of plot 2bb is, indeed, remarkable, and the fact that this falling off has been noted alike in the wheat and in the barley is a matter calling for investigation, seeing how very successful was the application in the first instance of 2 tons of lime.

With the nitrate of soda plots, the heavier dressing (plot 3a) gave double the crop that the lighter dressing did, but both crops were miserably small, and it will be further noticed that, as in the case of the wheat, the addition of mineral manures to nitrate of soda gave practically no increase. As between the omission of potash or that of phosphates (plots 10a and 11a), there would seem to be evidence, as in the case of the wheat, of the need of potash on this land. Rape dust (plot 10b) did little good, but the one redeeming feature was the farmyard manure plot (11b), which gave a crop far in advance of any of the others. This amounted to 26·7 bushels per acre. No other one was near it, the next highest result being 7·5 bushels.

The valuation of the corn, carried out as usual, showed the barleys to be very inferior. Not a single sample reached the general basis of 36s. per quarter of 448 lbs. for the year, and several, including the nitrate of soda plots, fell as low as 30s. The grain was not merely small, but the colour was uneven, and there were many unripened grains, so that little would have gone for malting purposes.

ROTATION EXPERIMENTS, 1911.

(a) *Rotation IV. 1911, Wheat—after Mustard.*

As mentioned in last year's report, the Rotation Experiments, so far as the upper-half of the area devoted to them in

Stackyard Field was concerned, came to an end in 1910. On the lower-half, however, it was arranged to carry on for the wheat crop of Rotation IV. in 1911, and then to close this part also.

The Experiments of 1911 accordingly embraced only the old plots 5, 6, 7 and 8 of Rotation IV. Mustard had been the crop of 1910, and, after ploughing of the land, "Square Head's Master" wheat, at the rate of 9 pecks per acre, was drilled on October 18, 1910. The crop, owing to the dry season, was very patchy, and suffered greatly from the drought. It was cut on August 4, and carted on August 9, 1911. The results are given in Table III.

TABLE III.—*Rotation IV. Wheat, 1911.*

Stackyard Field—Produce per acre.

Plot	Head corn				Tail corn	Straw, chaff, &c.	Value of corn per quarter on basis of 35s 6d			
	Weight		Bush.	Weight per bushel	Weight					
	C	q. lb		Lb	Lb.			C.	q.	lb.	s.	d.
LOWER HALF (Bullock-feeding).										
5	Decorticated cotton cake plot									
	6	1 10	11·4	62·3	21	9 2 15	35	6		
6	Maize meal plot									
	7	2 25	13·8	62·5	17·5	10 3 25	36	0		
7	No cake or corn									
	6	1 27	11·7	62·0	25·0	9 3 9	35	6		
8	No cake or corn									
	5	0 7	9·1	62·3	20·5	7 3 14	36	0		

The highest yield was that on the plot where maize meal dung had been used, but the produce in all cases was small, and the results do not lead to any definite conclusions.

The quality of the wheat was, however, in each case good, and the valuer reported them quite up to the average of the season, colour and strength alike being good.

(b) *Series (C). New Rotation Experiment. 1911, Barley—after Swedes Fed Off.*

On the conclusion of the previous series of Rotation Experiments it was decided to renew the inquiry on somewhat different lines. A commencement was made in 1910, when, over the whole of the 4 acres previously occupied in Stackyard Field by Rotation III., swedes were grown. Instead, however, of the 4 acres being divided into 8 plots of $\frac{1}{2}$ acre each, the whole 4 acres were simply divided into two lots of 2 acres each. On one of these the swede crop was fed off by sheep which consumed *cake*, and the other two acres were similarly fed off by sheep which had *corn* given to them.; Barley followed in 1911, the

one half thus representing the barley crop after *cake-feeding*, and the other after *corn-feeding* on the land.

The swede crop of 1910 varied from 10½ to 14 tons per acre. This was made up to a uniform amount of 12 tons per acre on each half of the land. The sheep receiving cake consumed 8 cwt. of linseed cake, 8 cwt. of undecorticated cotton cake, together with 4 cwt. of chaff, this latter being a mixture of oat-straw and clover hay. The sheep receiving corn consumed 8 cwt. of barley and 8 cwt. of oats, together with 4 cwt. of chaff similar to that used in the case of the cake-feeding. After the sheep had fed off the roots, the land was ploughed, March 18—April 8, 1911, and "Goldthorpe" barley, at the rate of 9 pecks per acre, was drilled over the whole area on April 13. It came up very well, and formed a striking contrast to the continuous barley grown in the same field. The crop, after corn-feeding, always, however, looked rather better than that after cake-feeding, and this was borne out in the harvest results. The barley was cut on August 2 and carted on August 4, the results being given in Table IV.

TABLE IV.—*Series C. Rotation Experiment. Barley, 1911.*
Stackyard Field—Produce per acre.

Plot		Head corn			Tail corn	Straw, chaff, &c.	Value of corn per quarter on basis of 30s.	
		Weight	Bush.	Weight per bushel	Weight			
		C. q. lb.		Lb.	Lb	C. q. lb.	s	d.
1	Swedes fed off with cake	10 3 8	23·8	51	87·5	13 2 13	35	0
2	Swedes fed off with corn	12 3 10	23·5	50·4	90·6	17 0 3	37	0

It will be noted that the corn-feeding produced nearly 5 bushels per acre more corn and 3½ cwt. per acre more straw than did the cake-feeding. It is difficult to account for this, except by the peculiarity of the season, though it may be mentioned that the land was in nicer tilth after the sheep had done feeding with corn than it was after the cake-feeding, there having been a good deal of rain when the sheep were finishing their cake, and the land being somewhat "puddled" in consequence.

On examining the corn the valuer found that grown after the corn-feeding to be much mellowier than the other. The cake-fed barley had many hard corns and was not nearly so uniform in size.

EXPERIMENTS WITH NITROGENOUS TOP-DRESSINGS ON WHEAT, 1911.

Series (D). Stackyard Field.

Experiments of previous years had been concerned with wheat, barley, mangolds, potatoes, and oats. In 1911 it was decided to return to wheat, and to extend the inquiry by not merely using nitrate of lime and cyanamide separately, but by employing them also mixed in different proportions. The land used for the purpose was the upper-half of the old Rotation IV., where mustard had been the crop of 1910. The land, after being ploughed, was drilled on October 18, 1910, with 9 pecks per acre of "Square Head's Master" wheat. Along with it was given 3 cwt. per acre of superphosphate and $\frac{1}{2}$ cwt. per acre of sulphate of potash. The wheat came up fairly, but, in the beginning of the year, did not look at all well, and the subsequent drought affected it greatly. The different top-dressings were applied on May 16, 1911, but there was little or no rain to dissolve them, and they remained on the surface for a considerable time subsequently.

The wheat was cut on August 1, and carted on August 9. The results are given in Table V.

TABLE V.—*Experiment with Nitrogenous Top-dressings on Wheat, 1911.*

Stackyard Field—Produce per acre.

Plot	Manures per acre	Head corn			Tail corn Weight	Value of corn per quarter on basis of 35s. 6d.	
		Weight	Bush.	Weight per bushel			
		Lb.		Lb.	Lb.	s.	d.
1	Nitrate of soda ¹	1,240	20.4	60.8	61	54	6
2	Nitrate of lime ¹	1,026	16.7	61.4	60	34	6
3	No top-dressing	1,016	16.2	62.6	41	35	0
4	Sulphate of ammonia, 1 cwt.	959	16.2	63.0	37	35	6
5	Calcium cyanamide	1,061	16.8	63.0	38	35	6
6	Nitrate of lime. 1 part	1,174	16.6	63.0	47	35	0
	Cyanamide. 1 part						
7	Nitrate of lime. 1 part.	1,078	17.2	62.5	42	35	0
	Cyanamide. 2 parts						

¹ In quantity to supply as much nitrogen as that contained in 1 cwt. sulphate of ammonia.

It will be noticed that the plot which received no nitrogenous top-dressing gave a yield of 16.2 bushels per acre, and that the yield from sulphate of ammonia was one bushel below this.

The highest yield, that from nitrate of soda, was only 4·2 bushels more, namely, 20·4 bushels, this plot also giving the most straw.

The mixture of nitrate of lime and cyanamide, half and half, gave an increase of 2·4 bushels, and the mixing of the two materials was distinctly satisfactory, as thereby some of the inconveniences attaching to the use of either of the materials separately were avoided. Undoubtedly, the exceptional character of the year prevented the top-dressings from acting to anything like their full extent, and the results can only be taken as "comparative."

The quality of the corn was about average except where nitrate of soda and nitrate of lime had been used, it being then slightly inferior. Between the others there was nothing to choose.

GREEN-MANURING EXPERIMENTS, 1911.

(a). *Lansome Field.*

In Lansome Field, the old system of growing green crops and ploughing them in was continued. After the wheat of 1910 had been removed, an attempt was made to take trifolium in place of rape, but the crop was put in rather late, and did not come to anything much, so that it had to be ploughed up, and, in the end, the usual three green crops, tares, rape, and mustard were grown. Tares and rape were drilled in on May 5, 1911, and mustard on May 20, mineral manures (superphosphate and sulphate of potash) being again applied to the upper plots of the series. The mustard crop was ploughed in on July 8, the other two on July 13. Second crops were drilled on August 14, but, in consequence of the very dry weather, they never came up really well, and were ploughed in on September 23, wheat being subsequently drilled as the crop for 1912.

(b). *New Experiments. Series (A). Stackyard Field.*

In the experiments just recorded (Lansome Field), the green crops of tares, rape, and mustard had always been *ploughed in*. It was felt that it would be of interest to see whether the same results would be obtained with the green crops when *fed off* by sheep, as when ploughed in green. Accordingly, in the new experiment, this modification was made. An attempt was made, as in Lansome Field, to grow trifolium, but it was not successful, and, as in the other case, green crops of tares, rape, and mustard were grown over the 4 acres of Stackyard Field which had previously been devoted to Rotation I. of the earlier series of experiments.

Despite the drought of 1911, the green crops grew very fairly, and were fed off by sheep, the tares, June 13-21, the mustard, July 5-10, and the rape, July 11-15. In each case some cotton cake was given to the sheep with the green food.

On July 19, a second crop of tares was drilled, and on August 14, second crops of rape and mustard. The second crops, however, were but small on account of the dryness of the season. They were fed off by sheep, October 18-23, along with a little cotton cake, the land being then ploughed up and sown with wheat.

EXPERIMENTS ON LUCERNE.

Series (B). Stackyard Field, 1911.

It will be remembered that for the five previous years there had been grown in Stackyard Field three different varieties of lucerne, namely, Provence, American, and Canadian, and that the Canadian seed had, in every year, given the best return. There was, however, some uncertainty as to the exact origin of the Canadian seed, and it was decided now to make a more extended experiment with this and other varieties of lucerne, ascertaining definitely beforehand the history of the seed. Seven different varieties were grown, viz.:—American (Arizona), North American, Canadian, Turkestan, Provence, Russian (Europe), and Russian (Asia). The Canadian seed was obtained direct from the Government Experimental Farm at Ottawa, through the kindness of Dr. Saunders, the American (Arizona) seed was given by Messrs. Sutton & Sons, and the remaining varieties were obtained through Messrs. W. H. le May & Co. Inasmuch as opinions were found to vary considerably as regards the relative advisability of sowing lucerne under a corn crop or in the open, it was decided to let this form part of the inquiry, and, accordingly, the area of two acres devoted to the lucerne experiments was divided into two portions, a barley crop being grown on one of these portions, but not on the other. In order to avoid any difficulty that might arise from the importation of weeds, through farmyard manure or London dung, neither of these was used, but a special manure, composed of dissolved bones, sulphate of potash, and rape dust, was used for the lucerne. It should also be mentioned that, earlier in the year, lime had been applied to this area at the rate of 1 ton per acre. "Goldthorpe" barley, 9 pecks per acre, was drilled on the lower half on April 1, 1911, and lucerne was drilled all over on May 26. The plots were kept constantly hoed, and, in this way, though the season was a most dry one, it was found possible to secure a crop of each variety. On the land where lucerne was sown without a sheltering crop, spurry came up very strongly, and at one time threatened to smother the lucerne

On the half sown with barley there was, however, a striking difference, the lucerne coming up almost free from any weed. Although the lucerne grown in the barley was protected by the latter in its earlier stages, yet, when the barley had been cut and the lucerne was then exposed to the full heat of the sun, it appeared to suffer in the end more than did the crop sown from the beginning without any sheltering crop.

Of the different varieties, the two that stood out undoubtedly the best were the two American varieties. The Canadian, while fair, did not appear likely to carry out the promise shown in the earlier experiment.

EXPERIMENTS ON SUGAR-BEET.

Although sugar-beet had previously been grown experimentally at Woburn, yet the increased interest taken in the question of sugar-beet growing in this country was the occasion of a more detailed series of experiments being carried out in 1911. The land devoted to this purpose consisted of 2 acres in Stackyard Field where the soil is a light sandy loam, and also a smaller area on Road Piece Field where the soil is of heavier character, and where mangolds were grown side by side with sugar-beet for purposes of comparison.

(a) Series B. Stackyard Field. Light Loam.

The land was ploughed March 24-April 1, London dung, 12 tons per acre, being carted and spread April 22-28. On May 4, 3 cwt. per acre of superphosphate and 1 cwt. per acre of sulphate of potash were harrowed in, and sugar-beet was subsequently drilled.

In Stackyard Field there were three different varieties, all of which had been obtained direct from the Continent. These were: Vilmorin's "Improved White," "Klein Wanzleben N," and "Klein Wanzleben Z." Not only were these three varieties tried, but, in addition, each variety was grown in rows at three different distances apart, namely, 12, 15, and 18 in. The first hoeing was done May 27-30, the second hoeing June 8-30, during which time the crop was singled and set out. A third hoeing followed July 1-7, and on July 14 a top-dressing of 1 cwt. per acre of nitrate of soda was applied throughout to the sugar-beet.

Despite the very unfavourable weather, a quite good plant was obtained, but the subsequent drought caused the growth to be stunted, and the crop, though fair for the year, was not what it would have been under ordinary circumstances. This was shown in the tendency of the roots to become "fangy," thereby causing a good deal more earth to attach to them than would have ordinarily been the case.

In consequence of the rows being much closer together than would have been the case with mangolds, it was necessary to do all the hoeing by hand. It was hard to draw, from the appearance of the plants as they were in the field, any definite conclusions as to the superiority of one variety over the other, or of any particular way of planting.

The crop was raised early in November, special implements, obtained from Holland, being employed for the purpose. These were found to work very well. The roots were topped and tailed in the field, then thrown into carts and weighed, in just the same way as mangolds would be. A portion of each lot was subsequently washed and re-weighed in order to see what the produce of the cleaned roots, as received by a factory, would be. Careful details were kept of the cost of hoeing, singling, lifting, &c., in order to institute a comparison with mangold-growing.

After the weighing of the crop, samples of the roots were analysed. Table VI. gives the details obtained.

TABLE VI.—*Sugar-beet (Stackyard Field), 1911.*

Plot	Variety	Distance of rows apart	Produce per acre of washed roots				Percentage of sugar in washed roots	Sugar per acre
			T	c.	q	lb	Per cent	T c
1	"Vilmorin's Improved White"	12	7	7	3	22	16.47	1 4
2	" " "	15	7	11	1	3	15.20	1 3
3	" " "	18	5	17	2	12	14.81	0 18
4	"Klein Wanzleben N"	12	6	8	2	5	15.56	1 0
5	" " "	15	7	2	2	1	15.83	1 3
6	" " "	18	9	7	3	20	15.30	1 8
7	"Klein Wanzleben Z"	12	7	18	2	4	16.19	1 6
8	" " "	15	7	16	2	22	16.86	1 6
9	" " "	18	8	1	1	23	15.89	1 6
Average		—	7	10	1	3	15.79	1 4

(b) *Road Piece Field. Heavier Land.*

In this case only one variety of sugar-beet, namely, "Klein Wanzleben Z," was grown, but at the three distances apart, namely, 12, 15, and 18 in., that were adopted in Stackyard Field.

Side by side with sugar-beet was grown a plot of "Yellow Globe" mangolds, the seed being drilled in rows 24 in. apart. Dung was spread April 5-17, and the mangold seed was drilled April 15-17, the drilling of sugar-beet following on May 5.

The mangold and also the sugar-beet came up very well, and the crops were much larger than in Stackyard Field, the land being heavier and more suitable for root-growing.

On July 13 a top-dressing of 1 cwt. of nitrate of soda and 1 cwt. of salt was given to the crops. The sugar-beet were ready rather earlier than the mangolds, and were raised October 22-28, the mangolds being similarly taken up November 1-8. In Table VII. the comparative weights of the two crops grown on the same land are given.

TABLE VII.—*Comparison of Sugar-beet and Mangolds ("Yellow Globe") grown in Road Piece Field, 1911.*

Plot		Distance of rows apart	Produce per acre of roots (unwashed) as weighed in field			
		Inches	T	c	q.	lb
1	Sugar-beet, "Klein Wanzleben Z" .	12	21	1	0	0
2	" " " " .	15	22	13	0	0
3	" " " " .	18	23	15	0	0
4	Mangolds, "Yellow Globe" . . .	24	44	4	0	0

The weights given in Table VI. for experiment (α) are those of the *washed* roots only, as it would be in this condition that the sugar-beet would be utilised in a factory. The weights of the bulbs as taken in the field were considerably higher, the highest being 15 tons 18 cwt. and the lowest 10 tons 16 cwt. per acre. But these latter weights were those of the bulbs treated just as mangolds would be, the tops and tails cut off and the adhering earth shaken off as far as possible. The roots were then taken to the farm, and a portion from each plot was thoroughly washed and the loss recorded. This was found to amount to from 35 to 40 per cent., a much higher figure than is generally reckoned. At the same time it is only fair to mention that, owing to the very exceptional season, the roots were small and not well grown, and, moreover, they showed considerable "fanginess." All this would contribute to the holding up of proportionately more earth than would be the case with well-shapen, regular, and smooth roots. Still, there is great reason for believing that the loss of weight involved in washing the roots before they are used in the factory is very much more than is generally stated. In this connection it may be mentioned that washing was similarly tried with the mangold crop, and the loss so found was 13 per cent.; again, more than is generally believed to be the case.

The analyses were made, of course, in the cleaned roots, and the produce of sugar per acre was calculated out from these analyses, and is given in the last column of Table VI.

From results obtained in an exceptional season such as that of 1911 it is very difficult to draw fair conclusions either as to the yield of sugar-beet per acre, the amount of sugar, or the

respective values of the different varieties grown or of the methods of planting employed. But, so far as one may hazard conclusions, it would seem that, on the whole, the "Klein Wanzleben Z" did the best, then the "N" variety of the same. As regards distance of rows apart, the results were too "in and out" to say much about them.

In experiment (b) the sugar-beets were not washed, but the weights were those taken in the field just as a crop of mangolds would be weighed. As already stated, the mangolds were found to lose 13 per cent. by washing, against the 35 to 40 per cent. of loss with the sugar-beet.

The weights put out in Table VII. of the respective yield of sugar-beet and mangolds enables a comparison to be drawn between the two crops, for, although the season was an exceptional one, the crops were grown side by side on the same land, they were similarly manured, &c., and so were grown under quite similar conditions. It will be seen that the mangolds gave practically double the crop that sugar-beet did, and this would be further accentuated had the crops been compared in the washed state. The soil in this experiment was much more suitable for root-growing than that of Stackyard Field (experiment (a)), and the yield of sugar-beet was increased accordingly from 14 and 15 tons to 22½ tons per acre reckoned on the *unwashed* roots. In this case it would seem that having the rows wider apart slightly increased the yield.

Coming now to the relative cost of cultivation, it was found, as nearly as could be ascertained, that the sugar-beet cost 2*l.* an acre more to grow than did the mangold, and, while the cost of the latter might fairly be put at 10*l.* per acre, the sugar-beet cost 12*l.* per acre. Careful records were kept of certain details, such as the cost of hoeing, singling, lifting, &c., and the following may be found of interest :—

	Sugar-beet						Mangolds
	12 in. apart		15 in. apart		18 in. apart		21 in. apart
Cost per acre of hoeing, singling, and cutting out	s	d.	s	d.	s	d.	s d.
	49	6	40	6	33	0	16 6
Cost per acre of lifting crop	37	0	30	0	25	0	8 0
	86	6	70	6	58	0	24 6

In making these comparisons it must be borne in mind that with sugar-beet all the hoeing had to be done by hand, whereas with mangolds, sown wider apart from row to row, horse-hoeing could be employed to a certain extent.

While the results of sugar-beet growing in 1911 were, of course, exceptional owing to the season, it may at the same time be mentioned that the sugar-beet crop of 1910, grown in rows 24 in. apart, only amounted to 12 ton 2 cwt. of unwashed roots per acre, the mangold crop being $31\frac{1}{2}$ tons per acre, or more than double.

It is intended to continue the experiment in 1912.

EXPERIMENT ON THE USE OF LIME IN ROTATION (*BUTT FURLONG*), 1911.

Following the wheat of 1910 came the swede crop. The swedes were drilled July 11-14, and singled August 27. The land, however, became so hard and dry that the crop of swedes was an extremely poor one, and, in fact, a failure.

EXPERIMENTS ON THE PREVENTION OF POTATO DISEASE (*LANSOME FIELD*), 1911.

A very exhaustive series of experiments on the above subject had been mapped out by Mr. Spencer Pickering, of the Ridgmont Fruit Farm, and land for carrying these out had been placed at Mr. Pickering's disposal. To these plots were added others on which it was intended to carry out supplementary inquiries, such as the use of dry-spraying, &c.

The land was well manured with London dung, and the potatoes were duly planted. As it turned out, however, there was no sign whatever of potato disease throughout the year, and the whole experiment, on which so much time and trouble had been expended, accordingly led to no result.

GRASS EXPERIMENTS (*BROAD MEAD*), 1911.

(a) Manurial experiments.

(b) On the use of different kinds of lime.

In 1911 Broad Mead Field was grazed, and, accordingly, there are no weights of hay to record.

Further, in consequence of the extreme drought, pastures, after June, were thoroughly burnt up, and presented a parched appearance. It is worthy of note, however, that in experiment (a), plot 5—on which lime had been applied—remained more or less green throughout the whole of the drought, thus presenting a marked difference to any of the others.

As regards experiment (b)—with different kinds of lime—it is still too early to record any definite result; but, so far as any conclusions can be drawn, it would appear that the Buxton lime and the chalk lime have done the best, and that then follow the lias and oolite limes, the magnesian lime being distinctly inferior to any other.

RAINFALL AT WOBURN EXPERIMENTAL STATION, 1911.
(292 ft. above sea level.)

	1911 In		1911 In
January	1 01	July	37
February	1 33	August	99
March	1 78	September	1 32
April	1 11	October	1 76
May	1 00	November	2 58
June	1 76	December	4 23
		Total	19 24

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THE ERADICATION OF WILD ONION.

WILD ONION (*Allium vineale*) is known as a most troublesome weed, alike on arable land and in pasture. On the former it may taint corn crops in which it occurs, rendering the corn unfit for milling; so also with "seeds hay"; while, when existing on dairy pastures, it will readily communicate its objectionable odour to milk. It is seldom found on light land, but only on heavy clay land, and, when present, may sometimes spread to such an extent as to render a field quite unculturable. Its spread, and the consequent difficulty of getting rid of it, are increased by the fact that it possesses three different methods of propagation: (1) by seed borne on a flowering head; (2) by "bulbils" or "aerial bulbs" borne on the flower-head; from this they detach themselves and, falling on the ground, give rise to a new plant; (3) by "off-sets" from the bulb itself, these separating themselves in considerable number and each being capable of starting a fresh plant.

Wild onion does not occur on the light sandy loam of the Woburn Experimental Farm, but in a field of clay land on an adjoining farm it grows freely, and part of the field is so infested with the weed that a corn crop is never successful here.

Experiments on eradication of this pest were commenced at the Woburn Pot-culture Station in 1899, and have been continued ever since. The first attempts were directed to ascertaining whether any "chemical" treatment would destroy the wild onion and prevent its spread; further, the use of lime and gas lime was tried; and thirdly, the adoption of means for altering the mechanical and physical conditions of the soil.

¹ For illustrations of these methods, see Journal R.A.S.E., Vol 62, 1901, page 339.

Simultaneously experiments were tried in the aforesaid field with those forms of treatment which seemed, from the Pot-culture trials, to give prospects of success. The field, however, was not at our free disposal, and the experiments could not be effectively controlled and carried out consecutively, so that it will not be necessary to refer further to this work. In the Pot-culture experiments the agencies that seemed to be most promising were (a) carbolic acid, (b) sulphocyanide of ammonium, (c) gas lime, (d) mechanical operations. It could not, however, be said that any of these methods effectually destroyed the weed; undoubtedly a check was given to its growth, but the hard "off-sets" from the parent bulb were found to resist the action of even strong "chemicals" like sulphuric acid, carbolic acid, &c. During the experiments many observations were made of the habit of growth of the wild onion, and these came in very usefully subsequently when the field trials now, to be specially dealt with were undertaken. Among other points it was noticed that the bulb worked its way up to the surface of the soil as the summer proceeded, and by July, if the ground was not too hard, it could be pulled up quite well by the hand without detaching the then forming "off-sets."

Early in 1902, a Member of the Society, Mr. Charles Reed, of Chelsing, Ware, Herts., reading in the Journal an account of the work done at Woburn, offered the Society part of a field on his farm where wild onion was very prevalent. Arrangements were entered into, and from 1902 until the present time experiments have been conducted there, Mr. H. M. Freear of the Woburn Pot-culture Station having throughout personally attended to the various applications given. The field in question is one 24 acres in extent, lying somewhat on a slope; the soil of the lower 10 acres of the field is distinctly lighter than at the top end, and here wild onion does not thrive to an extent to be really troublesome. But the upper and centre parts of the field are on heavy clay and here wild onion is such a pest as to cause the field to be practically unculturable. On the adjoining farm is an area of 160 acres which also is quite useless because of the presence of the weed. Accordingly the selected site was one admirably adapted for such a practical trial as that devised; Mr. Reed has shown the greatest interest in the work and has throughout given every assistance and done most readily whatever was asked of him. For this the best thanks of the Society are due to Mr. Reed. At the outset an area of about 2 acres was taken in hand in the worst part of the field; 15 plots were marked out and a scheme of experiment devised. It is not proposed to deal with these in detail, but only to state generally the results arrived at, and then to treat of the method which was eventually found

successful in largely reducing, if not in actually getting altogether rid of the pest.

The applications first tried were those which had been in use at the Pot-culture Station, others being added, and fresh plots taken as the work developed. As "farmers' applications," lime and gas lime were employed; of "chemical" applications carbolic acid, sulphuric acid, sulphocyanide of ammonium, arsenic, sulphate of copper, common salt, sulphate of magnesia, chloride of magnesium, carbolised lime, and various other materials were tried; thirdly, of "mechanical" nature were the following: cutting off the flowering heads, pulling up the plants by hand, deep-ploughing of the land, lightening the soil by road-drift, burning the soil, raising the top 8 inches of soil and putting three inches depth of ashes below it. This work occupied from February, 1902, to the close of 1904. As the practical outcome, none of the "farmers'" nor of the "chemical" applications really effected any permanent improvement. Gas lime (used locally as a remedy), carbolic acid, and sulphocyanide of ammonium all seemed to exercise some benefit, but salt made the weed more vigorous; the other "remedies" were all unsuccessful. In many cases the new growth from seed or "bulbil" was killed, but nothing seemed to touch the hard "off-sets" thrown off from the bulb. Cutting off the flower-heads only made the stem and bulb more vigorous and gave rise to more "off-sets"; even hand-pulling did not do good, and though quantities of plants were removed and burnt, there seemed to be a more abundant crop than ever next season; burning the soil was, of course, too expensive; deep-ploughing also seemed only to bring more bulbs to the surface. In short, the only methods which, in the field, seemed to promise any real success were the application of road-drift and the lightening of the land by an under-bed of ashes. While the use of road-drift certainly did good, it was not nearly as good as the employment of ashes. The latter was, of course, only tried on a small scale, and would be impracticable on a large one. But its success pointed to the conclusion that it was in the direction of finding some means by which the soil could be rendered lighter and less retentive of water, that success might be achieved. This had been ascertained already at the Pot-culture Station, for, when soil in which wild onion grew had water entirely withheld from it, the onions died; further, it is known that wild onion does not mature in light, well-drained soil. Accordingly, future work was pursued in this direction, and "chemical" treatment was confined to the use of carbolic acid and sulphocyanide of ammonium.

In the autumn of 1904 all the old plots were ploughed up and the whole area divided into five strips, each $\frac{3}{4}$ acre in

extent, running right across the field and embracing the old plots. On two of these strips the "chemicals" mentioned above were used, on a third strip road-drift at the rate of 25 tons per acre was spread, and it was resolved to sow the remaining two plots respectively with lucerne and with a grass-seed mixture. The object in these last two plots was to see whether, by introducing plants of deep-rooting nature, the soil could be opened out and, so to say, "tilled," so as to obtain a more open soil and get the water away. In this connection attention has been of late much directed to the "Clifton Park" system introduced by Mr. R. H. Elliot, of Kelso, in which it is maintained that by the inclusion of strong-growing and deep-rooted plants such as chicory, burnet, kidney vetch, &c., these would act as "soil tillers" and open and aerate the land. The experiment was one considered well worth trying here, and this, it may at once be said, was the one method that was found to be pre-eminently successful, while the growing of lucerne, though not so thoroughly effective, was attended with great benefit also.

The land was ploughed three inches deep in October, 1904, and cultivated during the spring of 1905. In May 1905 the road-drift was put on, lucerne was sown and also Elliot's seeds, the particular mixture being that known as the "Bankfield mixture."¹ The seeds were supplied by Mr. James Hunter, of Chester. Both lucerne and grass mixture came up well, and soon chicory and burnet were strongly in evidence on the grass plot.

From 1905 until 1911 the work was carried on under regular observation. Of the "chemical" applications it is not necessary to say more than that they were not successful, and, while some benefit accrued from the use of road-drift, this was so small, compared with the good results from lucerne and the grass mixture, that further reference to it is not called for. In the case of the lucerne plot and that sown with "Elliot's mixture" the results have, however, been most successful. Each year, from 1905 to 1910, a good crop of hay has been secured, and, on the ploughing up of the plots in the autumn of 1910, the observations made of the ground where these plots had been were of the highest interest. Already in October, 1906, Mr. Reed wrote: "You will be interested to know that not a single onion came to perfection on any of the grass plots this year; in fact, not one seed-head was to be seen. Every plot was thick (with onion) in May, but all went off with the hot weather. I never saw it like this before."

¹ Consisting of cocksfoot 14 lb., tall fescue 7 lb., tall oat-grass 7 lb., rough-stalked meadow grass 1 lb., chicory 3 lb., burnet 8 lb., yarrow 1 lb., kidney vetch 3 lb., alsike 1 lb., late-flowering red clover 2 lb., white clover 2 lb.—49 lb. per acre in all.

So matters proceeded until the end of 1910, the lucerne and grass plots giving each year a good crop of hay. But by the end of 1910 the lucerne plant had begun to fail, and the grass plot to get poor also, and accordingly it was decided to plough both plots up and, possibly, re-sow. This was done, and on May 22, 1911, Mr. Reed wrote: "We ploughed up the two plots last summer. It was such a wet time that I did not sow tares, but left it bare fallow. This past winter (1910-11) onions came up very thick *except* on Elliot's plot and the lucerne. There was scarcely any on Elliot's plot. On Saturday last we had in the steam cultivator over all the field; on Elliot's plot we could scarcely find any bulbs. Now the cultivator has gone a little deeper I do not know what will be the result, but I feel inclined to put all the piece where onions are down to the grass mixture next month. I may say that during the last two years we have not seen, on Elliot's plot, a single onion strong enough to seed; therefore I think they have not made any side bulbs, and so have almost died out. . . . I think if the land is drained and sown down to the grass mixture it would kill the onions out cheaper than any other way."

On receipt of this report visits were paid by Mr. Freear first and then by myself to the farm, and on the occasion of my visit (July 19, 1911), there were other visitors present who corroborated my observations. The land was then all lying fallow. On the upper part of the field, outside the experimental area, the land was thick with onions; the long brown stems were lying all over the surface, and the onions gave quite a white appearance to the field. Not only the old bulbs but the "off-sets" also were in profusion, and, on breaking open a lump of soil, bulbs of all sizes were frequently found in it. This continued to a depth of 8 to 10 inches. The idea that a single hot dry season will kill the onion is hereby disproved; indeed a trial was made, by actually hanging up the bulbs to dry in the sun (during June, July, and August, and they were found to be as vigorous as ever, and to come up freely when planted again in the autumn.

Passing on to the plot where lucerne had been, a very different state of things was found. There were only a few long stems to be seen, and what few bulbs were found were quite small ones. Where, here and there, the lucerne had failed in patches, onions were however to be found. Though it could not be said that the onions had disappeared, it was clear that they had been very greatly reduced.

Coming next to the "Elliot's plot," there was an even more marked change, for there was not a single onion stem to be seen over the whole plot, and to find an onion on it anywhere

was a matter of minute search; if one was found it was generally in a state of decay. So far as observation could go, the plot was practically freed entirely from the onion.

So convinced is Mr. Reed of the change wrought, that he is now going to put down the entire field, wherever affected by onion, with the grass mixture. Owing to the continued drought this could not be done in autumn, 1911, but will be started in spring, 1912. The grass mixture is an expensive one, and at the now increased prices for seeds amounts to as much as 64s. per acre, but Mr. Reed considers that it has paid him well, especially as he has taken a good hay crop each year. It is also worth considering whether, by exclusion of some of the more expensive items, the mixture might not be cheapened without losing its efficiency.

So far as this work has gone it would seem clear that what has been effected by the grass mixture, as also to a lesser extent by the lucerne, is the removal of water from the soil consequent on the tilling it has received by the deep-rooting plants, better drainage being thereby attained. There is just one other question—one suggested by the work of Mr. Pickering at the Ridgmont Experimental Fruit Farm—whether, possibly, the grasses may not have exercised something in the nature of a “toxic” influence on the onions. The field will now be laid down with a grass mixture on the lines of that previously adopted, but with some modifications in order to lessen its cost, and the further progress of the experiment will, it is felt, be followed with much interest.

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STATISTICS AFFECTING BRITISH AGRICULTURAL INTERESTS.

ONCE more the Board of Agriculture and Fisheries have most kindly supplied the Tables for this volume in the actual form in which they are printed. For this we beg once again to tender our best thanks, both time and labour having thus been saved. Further information will be found in the various Agricultural Statistics as they are published by the Board.

ACREAGE OF CROPS.

The first Table “Acreage under Crops and Grass and Number of Live Stock” gives the numbers for England, Wales, Scotland, Great Britain, and the United Kingdom for the beginning of June in 1910 and 1911. In the past year the acreage under Crops and Grass in the United Kingdom decreased by 3,000 acres. In the

previous year there had been an increase of 43,000 acres. In 1911 in Great Britain there was a decrease of 51,300 acres, of which 37,000 were in England. In the last three years Great Britain has shown a decrease of 116,000 acres under Crops and Grass.

Last year the area of Corn Crops in Great Britain, taken as a whole, showed a slight decrease of 5,000 acres. The main increases were of 97,200 acres under Wheat and 41,800 acres under Beans, while the chief decreases were 130,750 acres of Barley and 10,300 acres of Oats. In the United Kingdom the Corn Crops decreased once more, this time by 50,400 acres.

Taking England alone, there was a total loss of acreage of 37,000, of which 17,000 were in Arable Land and 20,000 in Permanent Grass. Wheat increased by 87,400 acres, Beans by 41,400 and Potatoes by 25,700, while Barley lost 112,000, Clover 33,000, and Oats 16,600.

As for crops other than Corn we note in England increases of 25,700 acres under Potatoes, 9,450 acres under Mangolds, and a decrease of 33,000 under Clover.

Bare Fallow in England decreased by 25,250 acres.

LIVE STOCK RETURNS.

In 1911 the Horses used for Agricultural purposes in England decreased by no less than 40,385 or over 4½ per cent. The number of Unbroken Horses was also less. The total number of Agricultural Horses in England was 1,132,581 and in the United Kingdom 2,033,216.

Cattle again increased last year in England. They increased also in Scotland but not in Wales. Cows and Heifers in Calf increased by 10 per cent. and those in milk by 1·2 per cent. The totals for Cattle stood at 5,173,976 for England and 11,866,111 for the United Kingdom. The increases in both cases were just under 1 per cent.

The Sheep in England again decreased, last year by 3·3 per cent. to 15,739,529. They also decreased in Wales by 93,660 or 2·5 per cent., while in Scotland there was a slight increase. There was at the same time a remarkable increase of Pigs throughout the United Kingdom. In England this was one of 19·5 per cent., bringing the total last year to 2,414,728.

PRODUCE RETURNS.

The Wheat crop in England increased by 880,303 quarters or over 13 per cent., and the total was higher than in any year since 1899. The produce per acre was 32·63 bushels or 0·98 above the average of the preceding ten years. The crop in Scotland was very heavy.

The yield of **Barley** in Great Britain was the lowest since 1901. In England the decrease since the preceding year amounted to 654,276 quarters or 11 per cent.

Oats, which had increased in the previous year, fell once more in 1911, giving a loss in England of 739,997 quarters or 7·6 per cent. There were also lesser yields in Scotland and Wales.

Beans, which are chiefly grown in England, and **Peas**, which are practically confined to this country of Great Britain, again fell off last year, in this case by 11·1 and 7·5 per cent. respectively. The produce per acre improved in the case of Peas and fell considerably in that of Beans.

There was a greater yield of **Potatoes** both per acre and altogether. The advance in the total was 7·7 in England. There were larger percentages of increase in the case of Wales and Scotland.

A very great decrease is recorded in the case of **Turnips** and **Swedes** amounting in England to 37·5 per cent. in total yield and to over 43 per cent. in produce per acre.

Mangolds also greatly diminished, the total produce in England shrinking by over 20 per cent. and the yield per acre by over 22 per cent.

The produce of **Hops** once more increased both in total and in yield per acre; the improvement was, however, entirely in Kent and Sussex.

There was a great decrease in the yield of **Hay**, both in that from Permanent Grass and that from Clover, Sainfoin, &c. In the first case the fall was, in England, nearly 28 per cent., and in the second nearly 25 per cent.

EXPORTS AND IMPORTS.

Last year the exports of "Meat, including Animals for food," from the United Kingdom (not including such as was merely in transit) amounted to 91,319 $\frac{1}{2}$., giving an increase of 2,450 $\frac{1}{2}$. over 1910.

The exports of "Other Food and Drink" totalled 2,049,895 $\frac{1}{2}$., which is an increase for the year of 428,920 $\frac{1}{2}$.. The figures for Grain and Flour, which are not included in the above, were on the other hand only 281,590 $\frac{1}{2}$., which shows a decrease of 66,959 $\frac{1}{2}$.

Looking to the other side of the account, the imports, into the United Kingdom, of Meat including Animals for food, amounted to 49,737,077 $\frac{1}{2}$ —an increase of 858,130 $\frac{1}{2}$. over the previous year.

The imports of "Other Food and Drink" totalled 133,548,412 $\frac{1}{2}$., which shows an increase of 6,668,936 $\frac{1}{2}$.. As with the exports so the imports of Grain and Flour showed

TABLE I.—*Acreage under Crops and Grass; and Number of and Scotland, with totals for Great Britain and for the*

	England		Wales	
	1911	1910	1911	1910
Total Area (excluding water)	Acres 32,394,303		Acres 4,749,651	
Total Acreage under Crops and Grass ¹	24,478,426	24,515,382	2,770,397	2,777,206
Arable Land	10,574,932	10,592,055	724,28	728,340
Permanent Grass ²	13,903,494	13,923,327	2,046,100	2,048,817
Wheat	1,804,045	1,718,629	38,487	39,428
Barley or Bere	1,337,513	1,449,492	86,800	87,589
Oats	1,841,116	1,857,731	206,037	205,093
Rye	39,962	41,933	366	532
Beans	299,846	258,460	1,608	1,378
Peas	168,182	167,154	712	664
TOTAL CORN CROPS	5,438,684	5,401,360	314,010	334,064
Potatoes	402,505	378,834	28,067	26,013
Turnips and Swedes	1,066,625	1,064,404	57,947	53,494
Mangold	438,916	429,477	11,154	11,067
Cabbage	58,062	55,595	785	775
Kohl-Rabi	13,192	14,769	86	79
Rape	68,229	71,338	4,515	4,457
Vetches or Tares	102,204	95,689	532	621
Lucerne	52,757	58,138	366	342
Hops	33,056	32,888	—	—
Small Fruit	76,287	76,036	902	1,018
Clover, Sanfoin, and Grasses under Rotation	2,327,265	2,360,416	281,512	285,222
Other Crops	128,121	121,852	1,048	1,010
Bare Fallow	318,999	343,246	4,764	4,632
Horses used for Agricultural purposes ³	No. 843,632	No. 881,017	No. 93,117	No. 96,583
Stallions ⁴	6,321	—	1,495	—
Unbroken } One year and above	195,578	208,604	38,448	40,051
Horses } Under one year	87,058	91,451	20,387	21,104
Total	1,132,581	1,184,072	151,422	157,787
Other Horses ⁴	125,741	—	11,175	—
TOTAL OF HORSES	1,258,322	—	162,597	—
Cows and } In milk ⁵	1,630,089	1,618,411	237,855	241,111
Heifers } In calf but not in milk ⁵	478,461	434,939	47,025	41,349
Other Cattle—Two years and above	1,038,703	1,025,138	89,607	85,411
" " One year and under two	1,027,107	1,061,388	174,470	182,737
" " Under one year	969,661	885,885	101,814	189,709
TOTAL OF CATTLE	5,173,976	5,124,251	740,271	740,817
Ewes kept for Breeding	5,960,099	6,140,062	1,509,976	1,537,741
Other Sheep—One year and above	3,359,815	3,338,401	795,578	813,792
" " Under one year	6,419,615	6,795,055	1,285,567	1,333,248
TOTAL OF SHEEP	15,739,529	16,273,518	3,591,121	3,684,781
Sows kept for Breeding	333,786	281,237	41,797	33,446
Other Pigs	2,030,942	1,739,082	164,514	162,831
TOTAL OF PIGS	2,414,728	2,020,319	206,311	196,280

¹ Not including Mountain and Heath Land.² Including Mares kept for Breeding.³ Above two years old used, or intended to be used, for service.⁴ Not collected prior to 1911.⁵ Not separately distinguished before 1897.

Live Stock, on June 5, 1911, and June 4, 1910, in England, Wales, United Kingdom.

Scotland		Great Britain		United Kingdom, including Ireland, Isle of Man, and the Channel Islands	
1911	1910	1911	1910	1911	1910
Acres 19,070,466		Acres 56,214,419		Acres 76,647,066 ^c	
1,845,835	4,853,342	32,094,658	32,145,930	46,928,621	46,931,637
3,348,568	3,348,446	14,647,788	14,668,890	19,686,722	19,603,821
1,497,267	1,504,896	17,446,870	17,477,040	27,241,899	27,327,816
63,506	52,797	1,906,038	1,808,854	1,952,422	1,857,671
173,617	191,620	1,597,930	1,728,681	1,758,842	1,899,130
963,498	958,150	3,010,671	3,020,974	4,071,927	4,116,137
6,046	6,784	46,374	48,249	55,474	57,004
10,378	10,204	311,833	270,042	313,667	271,983
1,008	910	167,903	168,728	168,311	169,091
1,218,055	1,219,465	7,040,749	7,045,528	8,920,643	8,571,016
142,629	136,837	571,801	539,684	1,175,168	1,144,465
438,818	442,447	1,563,890	1,565,345	1,842,216	1,848,918
2,250	2,265	452,820	442,779	530,927	518,990
6,302	5,559	65,179	61,929	} 198,077	192,918
52	32	13,330	14,830		
5,829	5,929	78,673	81,722		
7,807	8,294	110,543	104,804	113,194	107,229
17	27	53,140	58,505	} 33,057	32,887
—	—	33,056	32,886		
7,119	7,260	84,308	84,309	98,745 ^v	97,711 ^v
1,511,031	1,511,389	4,119,808	4,157,037	6,759,582	6,670,398
3,020	2,810	132,189	125,672	285,299	264,816
6,639	6,132	329,402	354,010	339,814	354,472
No.	No.	No.	No.	No.	No.
150,305	150,316	1,087,054	1,136,915	1,476,287	1,520,803
1,057	} 33,626	8,875	} 282,281	—	} 385,635
31,783		263,799		374,761	
13,427		120,847		182,168	
196,572	203,567	1,480,575	1,545,376	—	—
9,902	—	146,818	—	—	—
206,474	—	1,627,393	—	2,093,216	2,094,587
361,721	364,587	2,229,115	2,225,109	} 4,407,800	4,342,186
70,448	66,231	595,934	512,509		
265,730	242,646	1,394,045	1,353,195		
274,382	275,487	1,485,959	1,519,562	2,515,449	2,543,045
227,736	221,858	1,409,211	1,396,952	2,529,361	2,516,707
1,200,017	1,170,759	7,114,264	7,087,827	11,866,111	11,765,453
2,973,413	2,987,841	10,443,468	10,665,644	11,999,644	12,281,507
1,345,481	1,335,124	5,500,874	5,487,317	6,301,041	6,267,660
2,845,448	2,821,681	10,550,630	10,949,984	12,179,122	12,615,430
7,164,342	7,144,646	26,494,992	27,102,945	30,479,807	31,164,587
22,206	16,792	397,789	331,478	549,079	462,880
148,909	116,555	2,424,365	2,018,468	3,700,934	3,008,601
171,115	133,347	2,822,154	2,349,946	4,250,013	3,561,461

^a Figures for Jersey include Water.

^v Figures for Ireland include Orchards.

TABLE II.—Produce of Crops—Estimated Total Produce and Yield per Acre of the undermentioned Crops in Great Britain in the Year 1911, with Comparisons for 1909, and the Average Yield per Acre of the Ten Years 1901-1910.

Crops	Estimated total produce		Acreage		Average estimated yield per acre		Average of the ten years 1901-1910	
	1911	1910	1911	1910	1911	1910		
Wheat	Qrs.	Qrs.	Acres	Acres	Bush	Bush	Bush	
	England. . .	7,359,142	6,478,839	1,804,045	1,716,629	32 63	30 19	31 65
	Wales . . .	135,430	135,986	38,487	39,428	28 15	27 59	26 82
	Scotland. . .	337,599	244,831	63,506	52,797	42 53	37 10	39 30
	Great Britain	7,832,171	6,859,656	1,906,038	1,808,854	32 87	30 34	31 73
Barley(a)	Qrs.	Qrs.	Acres	Acres	Bush	Bush	Bush	
	England. . .	5,256,546	5,910,892	1,337,431	1,449,492	31 44	32 62	33 31
	Wales . . .	330,678	350,994	86,800	87,569	30 43	32 06	31 16
	Scotland. . .	786,351	797,157	173,017	191,620	36 23	33 28	35 05
	Great Britain	6,373,575	7,059,013	1,597,248	1,728,681	31 91	32 67	33 47
Oats	Qrs.	Qrs.	Acres	Acres	Bush	Bush	Bush	
	England. . .	8,981,803	9,721,800	1,841,136	1,857,731	30 03	41 87	42 07
	Wales . . .	858,792	971,683	206,087	205,093	33 35	37 90	35 04
	Scotland. . .	4,453,512	4,535,142	993,498	958,150	36 98	37 87	37 35
	Great Britain	14,294,107	15,228,625	3,010,671	3,020,974	37 98	40 33	40 14
Beans	Qrs.	Qrs.	Acres	Acres	Bush	Bush	Bush	
	England. . .	917,591	1,032,377	294,059	256,528	24 66	32 20	30 05
	Wales . . .	3,456	4,896	1,134	1,963	24 38	28 74	26 86
	Scotland. . .	39,089	46,447	9,463	9,493	33 05	39 14	35 71
	Great Britain	960,136	1,083,720	304,656	267,384	25 21	32 42	30 26
Peas	Qrs.	Qrs.	Acres	Acres	Bush	Bush	Bush	
	England. . .	453,976	496,588	139,150	151,823	26 39	26 17	27 27
	Wales . . .	1,641	1,946	561	660	23 40	23 59	21 79
	Scotland. . .	1,532	2,114	472	566	25 97	29 88	27 55
	Great Britain	462,149	500,648	140,183	153,049	26 37	26 17	27 24
Potatoes	Tons	Tons	Acres	Acres	Tons	Tons	Tons	
	England. . .	2,674,756	2,467,179	402,506	376,834	6 65	6 55	6 06
	Wales . . .	176,374	131,680	28,897	26,013	5 58	5 08	5 06
	Scotland. . .	975,182	878,900	142,629	136,837	6 84	6 12	6 39
	Great Britain	3,826,312	3,477,189	571,801	539,684	6 69	6 44	6 08
Turnips and Swedes	Qrs.	Qrs.	Acres	Acres	Bush	Bush	Bush	
	England. . .	9,316,505	16,531,822	1,066,625	1,064,404	8 73	15 53	13 53
	Wales . . .	823,874	1,000,613	57,947	58,494	14 30	17 11	15 60
	Scotland. . .	6,251,569	8,162,673	438,516	442,447	14 25	18 45	16 37
	Great Britain	16,390,948	25,695,018	1,563,390	1,565,345	10 49	18 41	14 40
Mangold	Qrs.	Qrs.	Acres	Acres	Bush	Bush	Bush	
	England. . .	7,245,902	8,105,471	498,918	429,457	16 51	21 20	20 11
	Wales . . .	181,322	205,488	11,154	11,057	17 15	18 58	17 86
	Scotland. . .	43,209	42,056	2,250	2,265	19 20	18 87	17 76
	Great Britain	7,470,433	8,352,995	452,320	442,779	16 54	21 12	20 04
Hay from Clover, Sainfoin, &c.	Tons	Tons	Acres	Acres	Owt.	Owt.	Owt.	
	England. . .	1,774,464	2,360,419	1,465,383	1,485,573	24 22	31 78	30 15
	Wales . . .	185,658	234,765	172,049	189,899	21 58	27 63	25 04
	Scotland. . .	652,410	669,164	437,333	419,067	29 84	31 94	32 25
	Great Britain	2,612,532	3,264,338	2,074,765	2,074,579	25 18	31 47	30 12
Hay from Permanent Grass	Tons	Tons	Acres	Acres	Owt.	Owt.	Owt.	
	England. . .	3,896,205	5,441,735	4,283,620	4,295,332	18 20	25 33	24 15
	Wales . . .	444,891	584,963	547,194	545,109	16 28	21 46	19 94
	Scotland. . .	226,276	225,589	171,434	163,503	20 40	27 56	26 26
	Great Britain	4,567,372	6,252,292	5,002,257	5,004,444	18 27	24 99	23 53

(a) Including Bere.

(b) Exclusive of a certain area (amounting in 1911 to 7,177 acres of beans and 27,720 acres of peas) the produce of which was cut or picked green.

TABLE III.—*Estimated Total Production of Hops in the Years 1911 and 1910, with the Acreage and Estimated Average Yield per Statute Acre, in each County of England in which Hops were grown.*

COUNTIES	Estimated total produce		Acreage returned on 5th June		Estimated average yield per acre	
	1911	1910	1911	1910	1911	1910
	Cwts	Cwts.	Acres	Acres	Cwts	Cwts
East . . .	61,606	49,135	5,718	5,779	10 77	8 50
Mid . . .	79,101	64,874	6,966	6,942	11 36	9 34
Kent { Weald . . .	86,032	72,886	7,507	7,357	11 46	9 91
Total, Kent	226,739	186,895	20,191	20,078	11 23	9 31
Hants . . .	14,627	16,946	1,444	1,411	10 13	12 01
Hereford . . .	29,256	40 961	5,034	4,987	5 81	8 21
Surrey . . .	4 269	5,341	500	514	8 54	10 38
Sussex . . .	29,847	22,878	2,698	2,653	11 06	8 62
Worcester . . .	22,630	28,666	3,061	3,109	7 39	9 22
Other Counties ¹ .	655	988	128	134	5 12	7 37
Total . . .	328,023	302,675	33,056	32,886	9 92	9 20

¹ Gloucester and Salop.

TABLE IV.—*Quantities and Values of Corn Imported into the United Kingdom in the undernoted Years.*

[From the December Accounts relating to Trade and Navigation of the United Kingdom]

Description	Quantities			Values		
	1909	1910	1911	1909	1910	1911
	Cwt.	Cwt.	Cwt.	£	£	£
Wheat . . .	97,854,425	105,222,688	98,109,087	45,272,131	44,160,884	38,927,680
Wheat meal and flour	11,052,540	9,960,491	10,065,123	6,370,480	5,510,905	5,277,043
Barley . . .	21,556,470	18,281,500	24,504,120	7,148,849	5,396,452	8,248,281
Oats . . .	17,835,998	17,495,014	18,275,937	5,487,857	4,823,869	5,391,970
Peas . . .	1,814,149	1,591,111	2,194,094	603,054	718,740	1,012,862
Beans . . .	2,171,230	849,082	1,029,131	757,600	311,676	375,345
Maize . . .	89,382,605	37,021,192	38,602,330	12,122,812	10,294,340	10,713,183
Oatmeal, groats, and rolled oats . . .	583,125	775,033	835,985	495,118	582,225	598,405
Maize meal . . .	334,140	461,624	643,510	127,751	158,953	224,415
Other kinds of corn and meal	1,626 296	1,740,362	1,829,263	677,544	645,415	748,723

TABLE V.—*Average Prices of British Corn per Imperial Quarter in England and Wales, as ascertained under the Corn Returns Act, 1882, in each Week of the Year 1911.*

Week ended	Wheat	Barley	Oats	Week ended	Wheat	Barley	Oats
	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
January 7	30 5	23 11	17 0	July 8	32 1	25 10	19 9
January 14	30 8	23 10	17 2	July 15	32 3	25 10	19 11
January 21	30 11	24 4	17 4	July 22	32 5	24 3	19 5
January 28	30 11	24 5	17 3	July 29	32 5	23 6	19 7
February 4	30 9	24 5	17 5	August 5	32 0	24 4	18 2
February 11	30 5	24 6	17 5	August 12	31 6	26 9	18 0
February 18	30 3	24 7	17 6	August 19	31 6	27 8	17 10
February 25	30 2	24 9	17 7	August 26	31 8	28 10	18 0
March 4	30 0	25 0	17 5	September 2	31 7	28 4	18 3
March 11	30 1	25 0	17 5	September 9	31 10	28 4	18 1
March 18	30 1	24 11	17 6	September 16	32 0	29 0	18 5
March 25	30 2	25 0	17 5	September 23	32 4	29 11	18 9
April 1	30 3	24 11	17 5	September 30	32 6	30 5	19 1
April 8	30 4	24 7	17 7	October 7	32 7	30 9	19 5
April 15	30 3	25 2	18 3	October 14	32 9	31 0	19 10
April 22	30 4	25 5	17 10	October 21	32 9	31 5	19 11
April 29	30 11	25 6	18 3	October 28	33 1	31 7	20 6
May 6	31 4	25 7	18 6	November 4	33 4	31 10	20 8
May 13	31 8	25 1	19 0	November 11	33 4	32 7	20 11
May 20	32 6	25 4	19 2	November 18	33 1	32 10	21 0
May 27	32 8	25 0	19 5	November 25	33 0	32 5	20 10
June 3	32 5	24 10	19 5	December 2	32 10	33 10	20 11
June 10	32 4	25 7	19 7	December 9	32 9	34 0	20 9
June 17	32 3	23 11	19 8	December 16	32 11	33 5	20 9
June 24	31 11	23 9	19 10	December 23	32 9	33 5	20 8
July 1	31 10	24 5	19 9	December 30	33 0	33 4	20 7
Average of year.					31 8	27 3	18 10

TABLE VI.—*Annual Average Prices per Quarter and Total Quantities of British Corn sold in the Towns in England and Wales making Returns under the Corn Returns Act, 1882, in the Year 1911.*

Year	Wheat	Barley	Oats	Wheat	Barley	Oats
	s. d.	s. d.	s. d.	Qrs.	Qrs.	Qrs.
1911	31 8	27 3	18 10	3,140,257	3,123,986	858,311

TABLE VII.—*Annual and Septennial Average Prices per Bushel of British Corn in the Year 1911, with the Value of 100l. of Tithe Rent-charge.*

Year	Annual average price			Septennial average price			Value of tithe rent-charge of 100l.			
	Wheat	Barley	Oats	Wheat	Barley	Oats	Calculated on annual average		Calculated on septennial average	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	£	s. d.	£	s. d.
1911	3 11½	3 4½	2 4½	3 11½	3 1½	2 3½	75	18 6	72	14 2½

TABLE VIII.—Average Prices of Fat Cattle per cwt. (Live Weight) at the undermentioned places in England and Scotland, in each Year from 1904 to 1911 inclusive, together with the Average Prices for England, Scotland and Great Britain, compiled from the Returns received under the Markets and Fairs (Weighing of Cattle) Act, 1891.

Places	1904	1905	1906	1907	1908	1909	1910	1911
ENGLAND -	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>	<i>s d</i>
Carlisle	31 11	31 6	31 6	32 6	32 2	33 0	34 11	34 0
Leeds	33 4	32 11	33 0	33 2	33 6	33 7	36 3	34 9
Leicester	32 2	32 9	31 11	32 6	31 2	31 1	37 1	36 0
Liverpool	32 1	31 3	30 10	32 6	33 7	34 2	35 5	34 4
London	35 6	35 4	34 10	35 9	36 8	37 7	39 1	37 4
Newcastle	36 2	34 8	35 4	36 1	37 1	37 5	38 9	36 9
Shrewsbury	31 9	31 6	31 3	33 4	35 0	35 0	36 0	35 3
SCOTLAND—								
Aberdeen	32 8	32 6	32 5	32 8	36 6	34 5	35 10	34 7
Dundee	32 7	32 0	31 11	32 8	33 5	34 0	35 8	34 0
Edinburgh	34 10	33 10	34 2	35 1	36 5	37 2	38 7	36 10
Glasgow	35 8	32 6	32 5	33 1	34 3	34 10	36 2	35 1
Perth	33 3	34 4	34 6	35 8	37 0	37 11	40 3	37 10
England	33 1	32 8	32 6	33 6	34 2	34 8	36 0	35 0
Scotland	33 9	33 0	33 0	33 9	34 8	35 0	37 2	35 8
Great Britain	33 7	32 11	32 11	33 8	34 7	35 4	36 11	35 6

TABLE IX.—Average Prices of Wool in each Year from 1891 to 1911 inclusive.

Year	BRITISH				AUSTRIAN ²	NEW ZEALAND ³	SOUTH AFRICAN ³
	Leicester ¹	Half-bred ¹	Southdown ¹	Lincoln ¹			
	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.	Per lb.
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
1891	9½ to 10	10 to 10½	10½ to 13	9½	9½	9½	9½
1892	8½ " 9	9½ " 10½	10½ " 12½	8½	8½	9½	9½
1893	8½ " 9½	9½ " 10½	10½ " 12	10½	8½	9½	9½
1894	9 " 10	9½ " 10½	9½ " 12	10½	8½	9	9½
1895	9½ " 10½	9½ " 11	9½ " 11½	12	8	8½	9½
1896	9½ " 11	9½ " 10½	9½ " 11½	11½	8½	8½	7½
1897	8½ " 10	8½ " 9½	8½ " 10½	9½	8	8½	7½
1898	8 " 8½	7½ " 8½	8½ " 9½	8½	8½	8½	7½
1899	7 " 8	7 " 8½	7½ " 11	8½	9½	8	7½
1900	6½ " 7½	6½ " 8½	8 " 12	7½	11	8½	8½
1901	5½ " 6	5½ " 9½	7½ " 9½	6½	8½	6½	7
1902	5 " 5½	5½ " 6½	7½ " 9½	6½	8½	6½	7½
1903	6½ " 6½	7½ " 8	8½ " 11½	7½	9½	7½	7½
1904	8½ " 9½	9½ " 10½	9½ " 11½	10½	10	8½	7½
1905	11½ " 12	11½ " 12½	11½ " 13½	12½	10½	9½	7½
1906	12½ " 13	13½ " 14½	14½ " 15½	14½	11	11½	8½
1907	12½ " 12½	12½ " 13½	13½ " 15	12½	10½	11½	8½
1908	8½ " 8½	8½ " 10	11½ " 12½	8½	10	8½	8½
1909	8½ " 8½	10 " 11½	12½ " 13½	8½	10½	9½	8½
1910	9½ " 9½	11½ " 12½	14 " 15	9½	10½	10½	9
1911	9½ " 10½	11½ " 12½	13½ " 14½	9½	10½	10½	9

¹ Computed from the prices given in *The Economist* newspaper.

² Extracted from "The Yorkshire Daily Observer Wool Tables."

³ Computed from the Trade Returns

last year a decrease, in the present case of 1,535,528*l.* from 1910, and of 7,344,566*l.* from 1909.

Examining now the Export figures in more detail, we find that the vast majority of animals exported were Cattle, the value of the Sheep exported being less than 2 per cent. of the whole while only four Pigs are returned as sent abroad.

Under the head of "Grain and Flour" there was last year an increase of 26,776*l.* in Wheat Meal and Flour, and of 22,695*l.* in Malt, while there were decreases of 23,908*l.* in "Rice Cleaned or Milled in the United Kingdom" and of 94,109*l.* in "Offals of Corn and Grain" sent abroad.

As regards the Imports of last year, the great decreases were 208,417*l.* in Cattle, 46,605*l.* in Bacon, 110,343*l.* in Poultry and Game, while the only serious increase was 55,971*l.* in "Meat preserved otherwise than by Salting" (including tinned and canned).

THE WEATHER OF THE PAST AGRICULTURAL YEAR.

THE WINTER OF 1910-11.

THE winter was, upon the whole, mild and often very sunny. December was a very open month, but January and the earlier half of February were less mild, with occasional sharp frosts, mostly, however, of a very brief character. The coldest weather occurred at the beginning of February, when the sheltered thermometer fell below 20° in all districts excepting the Scilly and Channel Islands, and below 15° in many scattered parts of the country. Frosts of less intensity were experienced in the last week in December and the first and second weeks in January, and again in the second week in February, but in none of these instances did the cold weather last for more than three or four days at a time. The mildest weather occurred during the latter half of February or at the commencement of March, but the temperatures then recorded were in no way remarkable for the time of year, and were little higher than those observed on several occasions during the previous December.

At the commencement and towards the close of the winter the rainfall was in excess of the average, but at other times it was usually deficient. A very dry period occurred during the latter half of January and the first half of February, many places in the midland counties reporting an almost entire absence of rain lasting for about five weeks. The repeated heavy downpours which were experienced over practically the entire southern half of England in the earlier

half of December resulted in local floods of considerable severity. Owing, however, to the counterbalancing effect of the partial drought which occurred in January and February the total rainfall for the winter in the same district was in almost precise agreement with the average. In the east of England the winter rainfall was in excess of the average, but in the north-eastern counties it was very deficient, the amount over the district as a whole being more than 20 per cent. below the normal. The season was characterised by several long periods of gloomy misty weather, but these were interspersed with a number of days upon which the sun shone with unusual brilliancy, and as a result the total duration of sunshine was nearly everywhere a trifle in excess of the average.

THE SPRING OF 1911.

The spring was of a proverbially changeable character, but was on the whole fair and dry, with a temperature differing but little from the normal. Frequent spells of drought were experienced, and occasional sharp night frosts, resulting in many instances in a considerable amount of damage to fruit and other crops. March was mostly cloudy, with a preponderance of winds from the northward, and a consequent absence of genial warmth, few places experiencing at any time a shade temperature as high as 60°. Sharp frosts were, upon the other hand, somewhat rare, the principal cases occurring around the middle of the month, or in the closing week. April opened with blustering wintry weather, with falls of snow in most districts and a strong north-easterly gale in the south of England on the 6th. The temperatures registered about this time were remarkably low for the season. On the nights of the 4th and 5th the sheltered thermometer fell at least 10° below the freezing point, while on the surface of the grass it went still lower, some stations recording a grass minimum as low as 15°. More remarkable even than the night frosts was the excessive lowness of the midday temperatures. On the 5th the thermometer at a number of places in the south of England failed to reach 35°, and in a few isolated localities it did not rise above the freezing point, the midday readings being the lowest ever recorded at so advanced a period in the season. After the 11th the cold northerly winds died away, and for the remainder of April the weather was more genial. Very little rain fell during the first three weeks; at Beaconsfield there were twenty consecutive days without any measurable quantity. In May another long period of drought was experienced, many places in the central and southern parts of the country recording an entire absence of rain lasting for twenty or more days. In the north of England a heavy fall occurred, however, on the 13th and

14th, while in the south the closing week was marked by severe thunderstorms, accompanied in many places by rain of quite a torrential character. On the 31st as much as 3·6 in. of rain was measured at Banstead, 2·9 in. (in three hours) at Epsom, and 1·6 in. (in one hour) at Sevenoaks. The warmest weather of the season occurred during the last three days of May, when the thermometer in the shade rose to 80°, or slightly above it in many scattered parts of the country.

THE SUMMER OF 1911.

The unique character of the summer of 1911 may be gauged by the fact that about the middle of August a general complaint arose as to the monotonous continuance of sunshine and heat.

The long drought which commenced in May continued throughout the earlier half of June, by which time many localities in the southern parts of England and Ireland had experienced an entire absence of rain lasting for more than four weeks. On June 5 the thermometer rose above 80° in a number of places, a reading of 85° being recorded in and around London, and a reading of 88° at Camden Square. Cool northerly winds afterwards set in, and between the nights of the 12th and 14th sharp and destructive ground frosts were experienced in many districts, an unusual occurrence within little more than a week of Midsummer Day. The week ended June 24 (Coronation week) proved, unfortunately, one of the worst of the whole summer, heavy rain setting in over a large portion of England and Wales on the evening of the 23rd, and continuing in many northern districts throughout the whole of the following day. On the 24th amounts varying between two and three inches were recorded at a number of stations in the north of England; at Morpeth the fall in twenty-four hours was nearly three inches and a half, while at Whitby a continuous fall, extending over fifty-five hours, yielded nearly 3·7 in. Early in July a marked improvement in the weather took place, and for about three weeks the conditions were fine and hot, an entire absence of rain being experienced at nearly all places in the southern parts of England and Wales. Day after day the maximum shade temperature exceeded 80°, while on the 7th and 8th the thermometer rose to between 85° and 90°, a reading as high as 91° being recorded at Wilton, near Salisbury. In another burst of great heat, which occurred on the 21st and 22nd, readings above 90° were recorded in many places, the thermometer on the 22nd touching 96° at Greenwich and 97° at Epsom. In the closing week of July the weather became unsettled and thundery, an unusually severe storm occurring in West London on the 28th, and more general storms on the following day, when the electrical disturbance

was accompanied by a violent squall of wind of a tornado-like character, which swept quickly from west to east across the southern parts of England and Wales. On the 28th and 29th the thermometer again rose to 90° and upwards in several places, and touched 93° at Bath. Early in August heavy falls of rain occurred in the west and north, but after this another long spell of hot, dry weather set in, and on the 9th, and again on the 13th, shade temperatures exceeding 90° were again registered in many parts of the country. The record heat for the entire summer was reached on the 9th, when the thermometer at a large number of places in eastern, central, and south-eastern England exceeded 95°, a reading as high as 98° being recorded at Epsom, Canterbury, and Raunds, 99° at Isleworth, and 100° at Greenwich. The reading at Greenwich was nearly 3° in excess of anything recorded at the Royal Observatory since precise temperature observations were started in 1841. After the middle of August the weather gradually broke up, although many districts continued to enjoy a fair allowance of bright sunshine.

For the season as a whole the mean temperature was, of course, greatly in excess of the average, the summer being in many places the hottest since that of 1868. Rainfall was very deficient in all districts except the north-east of England, where the total amount was largely swollen by the heavy storm of June 23rd and 24th; over our south-eastern counties it was little more than one-half the average. Over the United Kingdom generally the total duration of bright sunshine was the largest observed in any summer since the establishment of recording instruments in 1881. In the south-west of England the mean daily amount was more than two hours in excess of the average, and in the south-east it was nearly two hours and a half in excess.

THE AUTUMN OF 1911.

1911 was, as we have already seen, no ordinary year, and it was not until the middle of September that the summer could be regarded as at an end. In the early part of the month the weather continued fine and hot, and on the 2nd, a shade temperature of 90°, or a trifle above it, was recorded at several places in the east and south-east of England. Still higher readings were observed on the 8th, when the thermometer, for the seventh time in this wonderful year, rose above 90° in many English districts, and touched 94° at Greenwich, this reading being the highest on record for the month of September. Four days later, on the 12th, the thermometer again rose above 85° in several parts of our eastern and south-eastern counties and touched 89° at Camden

**Rainfall, Temperature, and Bright Sunshine experienced over
England and Wales during the whole of 1911, with Average
and Extreme Values for Previous Years**

RAINFALL

TOTAL FALL					NO OF DAYS WITH RAIN			
Districts	For 45 years 1866-1910				For 30 years 1881-1910			
	In 1911	Average	Extremes		In 1911	Average	Extremes	
			Driest	Wettest			Driest	Wettest
North eastern	23.6	25.5	19.9 (1884)	37.2 (1872)	180	186	162 (1884)	208 (1894)
Eastern	23.1	24.9	19.1 (1874 and 1887)	33.1 (1872)	175	181	156 (1898)	205 (1894)
Midland	22.0	27.6	19.2 (1887)	39.8 (1872)	162	180	148 (1887)	210 (1882)
South eastern	28.1	28.9	21.5 (1887)	41.7 (1872)	159	174	137 (1893)	197 (1882 and 1903)
North western with North Wales	34.3	37.7	24.9 (1887)	59.2 (1872)	182	200	163 (1887)	226 (1903)
South western with South Wales	36.6	41.8	28.9 (1887)	68.6 (1872)	179	199	159 (1887)	235 (1882)
Channel Islands	33.8	42.1	26.2 (1887)	30.5 (1882)	188	211	169 (1899)	251 (1886)

MEAN TEMPERATURE					HOURS OF BRIGHT SUNSHINE			
Districts	For 45 years, 1866-1910				For 30 years 1881-1910			
	In 1911	Average	Extremes		In 1911	Average	Extremes	
			Coldest	Warmest			Cloudiest	Sunniest
North eastern	49.0	47.6	44.8 (1879)	49.0 (1898)	1596	183.3	1006 (1885)	1601 (1901)
Eastern	50.4	48.7	45.6 (1879)	49.8 (1868 and 1898)	1803	158.3	1267 (1888)	1864 (1899)
Midland	47.7	48.5	45.6 (1879)	51.1 (1868)	1590	140.6	1179 (1888)	1715 (1893)
South eastern	51.0	49.7	46.7 (1879)	51.4 (1898)	1923	161.3	1245 (1888)	1983 (1899)
North western with North Wales	41.6	48.6	45.7 (1879)	50.3 (1868)	1675	139.8	1198 (1888)	1689 (1901)
South western with South Wales	50.8	50.0	48.1 (1888)	52.8 (1868)	1888	164.4	1459 (1888)	1964 (1893)
Channel Islands	51.1	52.2	50.5 (1885)	54.1 (1899)	2028	190.0	1710 (1888)	2300 (1893)

NOTE—The above Table is compiled from information given in the Weekly Weather Report of the Meteorological Office.
 For the Channel Islands the 'Averages' and 'Extremes' of Rainfall and Mean Temperature are for the thirty years 1881-1910.

The Rainfall of 1911 and of the previous Ten Years, with the Average Annual Fall for a long period, as observed at thirty-eight stations situated in various parts of the United Kingdom.

Stations	1911		Rainfall of Previous Years										Average rainfall
	Total rainfall	Difference from average	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	
			In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	
ENGLAND AND WALES:													
Durham	28.0	-15	24.9	24.8	19.1	24.8	23.8	19.2	19.0	30.8	18.5	22.9	27.2
York	25.1	-1	24.6	24.8	21.8	25.6	22.8	20.7	20.8	30.3	18.7	20.5	25.3
Hillington	32.0	+16	33.4	33.6	25.5	25.7	31.6	22.7	25.7	35.6	26.2	24.4	27.5
Yarmouth	20.4	-19	28.5	24.2	22.5	21.9	28.0	22.6	21.0	25.1	21.4	21.2	25.3
Cambridge	19.0	-16	22.8	23.1	17.6	21.2	22.4	19.0	17.6	30.5	15.8	18.7	22.7
Rothamsted	27.0	-1	29.7	26.8	23.4	25.3	26.8	24.8	23.2	33.3	19.6	21.1	27.9
Nottingham	19.4	-32	24.7	25.2	21.3	23.5	21.8	18.6	20.0	32.2	21.5	20.4	24.3
Sheffalee	23.5	-27	36.5	37.7	33.3	31.9	34.3	26.7	26.3	39.2	26.4	27.7	32.3
Hereford	25.4	-6	36.4	24.0	23.9	26.7	23.6	24.0	25.0	37.8	24.3	25.2	27.0
Gloucester	24.3	-21	33.2	32.1	24.5	28.9	26.2	25.1	23.3	41.1	35.1	26.1	30.7
Oxford	30.9	-16	28.0	27.5	23.9	26.9	24.0	21.0	22.7	35.9	16.7	22.3	25.0
London	22.3	-9	28.4	24.9	21.3	19.5	22.2	23.0	20.2	38.0	20.4	21.5	24.4
Hastings	29.6	+2	28.9	31.4	22.0	23.3	28.7	26.9	24.6	32.3	23.0	19.4	29.1
Southampton	30.4	-2	33.6	36.1	27.8	30.8	33.1	28.2	31.0	43.2	27.4	23.3	30.9
Stonyhurst	44.2	-6	53.3	43.8	43.3	50.0	49.7	38.8	39.6	58.9	36.8	39.0	46.3
Manchester (Piccadilly)	33.2	-10	40.0	41.2	37.7	40.4	42.2	33.3	32.0	45.2	26.5	33.3	37.0
Liverpool	25.3	-12	28.6	28.4	23.9	26.6	28.1	24.0	25.1	34.4	25.6	25.1	28.9
Llandudno	30.5	-1	36.7	32.0	30.3	26.3	31.6	26.1	26.0	38.5	25.0	26.7	30.8
Pembroke	34.8	+10	33.9	33.1	38.5	37.2	42.5	28.2	31.8	45.8	30.9	33.0	35.1
Clifton	29.0	-16	42.4	36.8	28.6	34.3	30.1	25.0	30.9	42.8	26.5	26.6	34.6
Cullompton	35.0	-2	46.8	34.4	27.5	33.4	33.9	28.1	34.9	42.7	30.8	31.1	35.7
Plymouth	37.6	+5	44.3	35.2	31.0	36.3	33.4	30.5	41.4	45.8	30.9	33.0	35.9
Scilly (St. Mary's)	34.2	+2	36.6	27.0	24.7	29.3	29.8	27.5	34.4	39.9	25.3	32.6	33.6
Jersey (St. Aubin's)	31.7	-7	44.4	31.7	25.2	28.6	29.2	30.3	37.3	38.2	30.4	29.6	34.2
Mean for the whole of England and Wales	28.8	-7	34.5	31.3	26.6	29.9	28.9	25.6	28.0	37.5	26.7	27.4	31.0
SCOTLAND:													
Stornoway	48.3	0	53.0	46.2	52.6	43.8	42.2	50.7	55.7	62.1	46.3	42.8	48.6
Wick	27.4	-6	32.5	33.6	32.0	29.6	33.2	32.3	25.3	35.9	28.4	32.1	29.3
Aberdeen	27.5	-10	27.7	30.4	28.0	28.7	31.5	28.5	23.7	36.3	27.3	28.0	30.7
Balmoral	29.0	-17	37.5	30.8	36.2	31.8	39.1	35.6	24.9	44.1	31.8	31.4	36.0
Leth	19.9	-16	25.3	27.1	22.1	30.7	30.2	19.2	23.4	30.9	16.4	22.5	23.8
Marchmont	31.7	-8	28.9	34.2	30.7	33.3	38.9	27.4	26.1	38.6	24.4	27.2	34.4
Port Augustus	44.8	0	42.2	37.4	43.9	42.0	51.6	43.6	44.4	66.0	35.6	36.9	44.6
Glasgow	36.3	-6	39.2	39.3	35.8	42.6	40.1	30.7	33.7	53.3	29.1	32.9	38.7
Mean for the whole of Scotland	41.7	0	43.2	41.8	43.1	44.5	46.3	41.4	42.1	57.1	43.0	40.8	41.8
IRELAND:													
Bellinst	36.3	+8	40.6	35.7	33.7	38.1	36.2	31.8	31.8	42.3	35.8	32.1	33.6
Markree Castle	42.3	+1	53.5	40.7	47.3	45.2	44.6	39.0	44.9	54.1	38.4	44.9	42.0
Armagh	27.8	-13	33.5	28.9	33.1	31.6	30.1	29.9	30.9	38.3	31.7	32.1	31.9
Dublin	23.5	-18	35.4	26.9	23.8	27.0	22.8	23.3	22.2	31.6	29.4	26.1	28.0
Birr Castle (Parsons-town)	31.0	-6	34.2	29.6	33.4	33.9	32.6	25.7	32.9	40.8	28.2	31.1	33.0
Kilkenny	36.3	+9	37.4	30.1	33.5	32.4	28.7	25.0	31.5	42.0	33.1	30.3	33.3
Mean for the whole of Ireland	36.5	-8	41.0	35.3	39.2	39.7	36.7	34.6	33.9	47.9	37.2	37.7	39.5

¹ The Average Fall is in nearly all cases deduced from observations extending over the thirty-five years 1871-1905.

² The Mean Rainfall for each country is based upon observations made at a large number of stations in addition to those given above.

³ The figures for the years prior to 1906 are for Braemar, which ceased reporting after 1905.

[Continued from page 421.]

Square. After the middle of the month the atmosphere fell gradually into an unsettled state, with sharp ground frosts on the 15th and 16th and again on the 21st and 22nd. Quite at the close of the month a northerly gale of considerable severity swept over our eastern and south-eastern counties. Shortly after the beginning of October the weather again improved, and although heavy rains occurred in the south-east of England on the 4th, the 7th, and 13th, there were many places in the west and north which experienced an entire absence of precipitation lasting for periods varying between 12 and 15 days. Between the 7th and 10th sharp night frosts occurred in most places, the thermometer on the grass falling in some localities at least 10 degrees below the freezing point. After the 19th the weather became generally stormy and wet. Very heavy rain fell in the south-east of England on the 24th, in the north of England on the 26th, and over nearly the whole country on the 29th. Sharp frosts occurred between the 25th and 28th, the sheltered thermometer falling below 25° in many places, and the exposed instrument on the grass sinking as low as 8° at Llangammarch Wells, and 15° at Birmingham. November was generally rough and unsettled, with frequent heavy falls of rain, interspersed, however, with substantial intervals of bright sunshine. In the earlier half of the month the wind (which often rose to the force of a gale) was usually from points between south and west, and the thermometer was consequently above its average level. After the 18th a radical change took place, the wind shifting to the northward and eastward with a decided fall of temperature, and with frequent showers of sleet and snow in the northern and eastern districts, and sharp frosts occurred on the nights of the 20th and 21st.

The mean temperature of the entire autumn was a trifle above the average: rainfall was generally in excess of the normal, but was rather deficient in the midland and south-western districts; bright sunshine was everywhere in excess, and largely so over our south-eastern counties.

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NOTES, COMMUNICATIONS, AND REVIEWS.

"Working the Stubble."—In the Bulletin de la Société des Agriculteurs de France of August 15, M. H. Hitier, in a note on the cultivation of land after the harvest, reminds us that the work of the farmer goes on all the year round. This last year, in France, he had noticed very great differences in the fields at the beginning of June, owing to the fact that in some of them suitable measures had been taken to preserve the moisture in the soil, whereas in others this had been neglected.

He says that in their country, among the best means of effecting this object, the foremost are working the stubble at once after the harvest, and also doing certain other work before winter sets in. The advantages of the first-mentioned in destroying pests have long been recognised, but other and greater benefits also result from it. It should be done at once after the harvest so as to economise the rain-water which falls before winter, and which otherwise is largely lost by evaporation from weeds. The dew that falls is similarly affected.

Some interesting and conclusive experiments on this point have been made for some years past by M. de Kerpely at the Royal Academy of Debreczen, in Hungary. After maize had been harvested for fodder, half of the field was at once turned over with a disc harrow or cultivator, while the other half was left alone. Tests were then made by taking out samples of soil at every few inches down to a depth of 40 in.

On August 9, the half which had been worked with a disc harrow had, down to 24 in., an excess of moisture of 14,300 gallons per acre over the unworked half of the field. On September 3 this excess amounted to 15,400; on the 7th to 31,100; and on the 30th to 37,400 gallons. On October 5 the whole field was sown with wheat, and the difference of moisture in the two halves of it, down to a depth of 32 in., was found to be as follows:—On October 21, 11,000; December 2, 14,300; December 13, 29,400; and on January 3, 31,600 gallons per acre. On March 16, after six weeks of dry weather and high wind, the difference, down to a depth of 40 in., was about 14,300 gallons per acre. These differences work out at about 3 per cent. each.

In order to facilitate the ploughing up of the stubble immediately after the harvest, so essential in dry farming and so important everywhere, Campbell, in America, is trying at the present time to combine the disc harrow with the reaping machine. M. Safary notes this with approval, and suggests a machine in which the reaping machinery should be worked by a gasoline motor, the horses simply furnishing the tractive power.

When the work on the stubble is done immediately after the harvest, it is seldom that what the French aptly call "before winter work" (*travaux d'avant-hiver*) cannot be carried out in autumn. This work, M. Hitier says, is the best way of storing up water for the succeeding dry season.

M. de Kerpely, as the result of his experiments, tells us that the land worked in autumn produced 2½ tons per acre more beetroot than did the unworked part, and this although abundant rain had fallen in May and June. This great difference he attributes to rain-water failing to penetrate into the unworked land. Other experiments have shown the differences in moisture per acre, between stubble-worked and unworked land, to be 60,000 gallons on March 6; 72,600 on May 6; 95,700 on June 7; and 84,700 on June 28. He also points out that not only has the worked land a great superiority in the amount of moisture it holds, but that the plants on it can utilise this moisture much more readily than can plants on the unworked land. All this confirms Déhérain's saying that the true object of working the land in autumn is to lay up reserves of moisture.

Such being the case, it may be asked why methods of working the stubble and of tillage before winter, as carried out in the beetroot and other intensive farms of the north of France, are so little known elsewhere. It is mostly for want of time that they are neglected, though, as at the moment of writing, in some years the land is too hard after sunny weather and high winds. In one case, we are told, extra yokes of oxen are kept for the work.

In the Aisne Department of France co-operative societies for steam cultivation have been started, and the Oise Department is following suit. The heavy work is paid for at the rate of 1*l.* 6*s.* an acre. This seems high compared to the cost of work done by oxen, but, as a first-rate farmer pointed out, one should take into account the result as well as the cost of work. He says, "If, thanks to steam cultivation, I can work all my beetroot land before the winter, I can get 4 to 5 tons more than I otherwise should, and the 16*s.* to 24*s.* spent on steam cultivation result actually in a very considerable profit."

Epitomised and translated by R. J. M.

Agriculture and Soils of Kent, Surrey, and Sussex.—By Hall and Russell.¹—The reader familiar with the many agricultural "Surveys" written by or published under the auspices of Arthur Young in the late eighteenth or early nineteenth century, cannot have helped feeling deep regret that nothing had been done in the whole of the nineteenth century to improve upon that great master's work. It has been possible to believe that all the advance of science of the last thirty years had done nothing towards the enlightenment of the agriculturist who wished to investigate the district in which he lived. Indeed, many during the last decade of the eighteenth century must have been in a better position to obtain reliable information about any particular district in England than have been those living in the first decade of the twentieth century. The book under review, however, has now, as regards the three counties treated of, completely altered that state of affairs. Mr. A. D. Hall and Dr. E. J. Russell have scientifically investigated the South-Eastern district, and in this book their published account of the survey cannot fail to convince even the most prejudiced of the great value of agricultural science as an adjunct to husbandry. It is quite impossible in the space available to convey an adequate conception of all that this modern survey entails. The natural features of the district, the minutest particles of the rocks which give rise to them, which have, after weathering, produced the most fertile or the most barren soils, are factors which the authors have explored, analysed, and explained in such a way as to show how they and one thousand other matters go to the determining of successful or unsuccessful farming. Investigations have been begun such as are likely to prove of much importance to other districts, as well as to the one under consideration; for instance, on page 59 (*et seq.*) there is given an account of the botanical analysis of two pastures—one good, the other only moderate. The herbage *per se* is not found to account for the difference of stock-carrying capacity in the two fields, and the authors carry the investigation further, but warn the readers that their "explanation . . . must, therefore, be taken as a tentative conclusion only." The matter of why one field will "feed a bullock" and another will only "run a store," is one on which more knowledge is much wanted, and it is to be hoped that the phenomena determining this problem will be further investigated in other parts of England. The thorough investigation of the agricultural practice of the district, the large number of analyses taken from all types of its soil, over a hundred of the results of which are published in the book, together with the investigation of climate

¹ To be obtained at the offices of the Board of Agriculture and Fisheries, 4 Whitehall Place, London, S.W. Price 2s. 6d.

and other conditions, enable Messrs. Hall and Russell to publish a very complete scheme of manuring for all the different districts, and for the various crops grown in the counties of Kent, Surrey, and Sussex. This latter information alone makes the work an indispensable adjunct to the libraries of all farmers in the South-Eastern district. The book, which through the enterprise of the Board of Agriculture may be bought for half a crown, is well illustrated, and contains a series of very interesting maps. It is to be hoped that its publication marks an epoch, for if, as Mr. Hall says in the preface, "the authors are two men who were primarily occupied with other work," surely it is time that the agricultural public in other districts should insist that their own particular locality be subjected to a scientific survey.

K. J. J. M.

"Blindness" of Barley.—So much of this disease may be seen, and so many inquiries concerning the evil results of it are made, that it seems very desirable to draw attention to a simple, inexpensive and apparently most efficacious remedy now brought to light.

The disease is treated of in Bulletin No. 5 of the Cambridge University Department of Agriculture by Mr. S. F. Armstrong. It is caused by a fungus (*Helminthosporium gramineum* Eriks), and its symptoms are described in the Bulletin as follows:—

"Its presence in a barley crop may be readily noticed from the time the plants are six inches high. At this period the upper surface of the leaves of infected plants is covered with long narrow spots of a violet colour. Later these spots become dark brown in colour with yellow margins. The ears of infected plants do not develop, and many of them remain permanently enclosed within the sheaths."

"Blindness" is in practice propagated by the untreated "seed" carrying the spores of the fungus from one growing crop which has been infected to another one. This being so, the Cambridge Department tried various "dressings" for "seed" barley, and in two cases with good results as regards blindness. One of the latter dressings, *copper sulphate*, though useful in eradicating this particular disease, was found harmful in other ways, and so was abandoned. The other one, *formalin*, was subjected to further tests, and was found so successful that, to summarise, one may say that corn grown from formalin-treated seed showed an increase of yield of 25 per cent. (or on an average taken over several years, of 9 bushels per acre) over untreated seed. The proportion of "tail" corn grown from untreated seed was 1 in 11, while that from formalin-treated seed was 1 in 27.

The following paragraph, taken from the Bulletin already quoted, describes what was found to be the best method of treatment :—

“Preparation and use of formalin.

“Formalin, or formal, is the commercial name for a solution containing from 35 per cent. to 40 per cent. of formic aldehyde in water. It can be purchased from the chemists in bottles at about 1s. 6d. per pint, or at reduced rates for larger quantities. It should be freshly purchased when required. One pint of formalin mixed with every twenty gallons of water used will give the most effective strength (1 part in 160 of water). The mixing may be done in a clean tub or in any other convenient vessel. It mixes readily with water. The seed corn should be placed in a coarse sack, or better still a wicker basket, and moved slowly up and down for about ten minutes in the solution, so that every grain is thoroughly wetted, *after which it must be spread out to dry.*” The italics are ours; harm is apt to result from neglecting the precaution indicated in the words so italicised. “When quite dry it is ready for sowing. The same solution may be used over and over again. The actual cost of dressing in this way will not exceed a small fraction of a penny per bushel in addition to the labour.”

This formalin treatment for “seed” barley should be more widely known than it is, as much loss is occasioned by failing to carry out a process which is very cheap and easy of application.

K. J. J. M.

Veterinary Studies for Agricultural Students.¹—A handbook treating of this most important subject, for the use of those who are eventually to practice farming is, at the present moment, much in demand; therefore, the volume now under review was read with considerable interest. Though the most captious would be bound to admit that it contains much useful information, the most lenient critic could not hold that the author has produced anything very ideal for its purpose.

It seems to be common sense to demand in this respect a book which will, *above all things*, tell of, illustrate, and describe *symptoms of disease*, and so enable a student to learn quickly how to recognise them. It is by this knowledge that the trained agriculturist ought to profit to the greatest extent. For, on the one hand, if he is well taught in matters of elementary diagnosis, he will save some money by not sending for the professional veterinarian in cases of trivial illness, and on the other he will save even more by a diagnosis made early

¹ By H. M. Reynolds, B.S.A., D.V.N., M.D., Macmillan & Co., New York

enough to give his professional adviser the chance of battling successfully with serious disease.

Furthermore, a text-book on veterinary matters, written expressly for agricultural students, should treat in detail of those items of doctoring which the "vet" has to leave to those looking after the case on the spot. Obviously the ordinary groom, cowman or shepherd wants supervision in time of illness, and if the farmer is to be in a position to give such supervision in the times between the visits of the veterinary surgeon, his training in the matter must be as complete as possible. It is in these two relations that the veterinary lecturer or writer, who addresses himself to agriculturists, may be most useful to the farming industry and to the members of his own profession.

It is a matter of common knowledge that, in this country at any rate, the veterinary profession looks upon instruction in their own subject, given to agricultural students, with a certain amount of suspicion. If, however, such instructions were more strictly confined to elementary diagnosis of serious disease, to nursing, and to what is so well described as "first aid," nothing could come of it but good, both to the farmer and to the veterinary surgeon.

We do not complain of Dr. Reynolds' treatment of these matters, we only wish there was more material of the kind, for, when he does write of such things, he is most interesting and instructive. Even had his treating of these simple subjects led to the crowding out of some of the more professional matter from his book, we do not believe that any one looking at it from the farmer's point of view would have complained.

K. J. J. M.

Royal Agricultural Society of England.

Patron.

HIS MOST GRACIOUS MAJESTY THE KING.

President for 1912.

LORD MIDDLETON.

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first elected
on Council

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1905	CARR, RICHARDSON, <i>Estate Office, Tring Park (Hertfordshire).</i>
1909	CROSS, Hon. JOHN E., <i>High Legh, Knutsford (Cheshire).</i>
1906	DUDDING, HENRY, <i>Riby Grove, Stallingborough (Lincolnshire).</i>
1905	EADIE, JOHN T. C., <i>The Rock, Newton Solney, Burton-on-Trent (Derbyshire).</i>
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1903	HARRISON, WILLIAM, <i>Hall House, Leigh (Lancashire).</i>

Year when
first elected
on Council

Ordinary Members of the Council (continued).

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1905	HINE, JOHN HENRY, <i>Pomphlett Farm, Plymstock, Plymouth (Devon)</i> .
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1900	HOWARD, JOHN HOWARD, <i>Clapham Park, near Bedford (Bedfordshire)</i> .
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1905	MAY, WILLIAM A., 3 <i>Wellington Street, Strand, W.C. (London)</i> .
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1907	TINDALL, C. W., <i>Wainfleet, S.O. (Lincolnshire)</i> .
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1889	WHEELER, E. VINCENT V., <i>Newnham Court, Tenbury (Worcestershire)</i> .
1889	WILSON, CHRISTOPHER W., <i>Rigmaden Park, Kirkby Lonsdale (Westmorland)</i> .
1908	WRIGLEY, LOUIS G., <i>Trelleck Grange, Chepstow (Monmouthshire)</i> .

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DISTRIBUTION OF GOVERNORS AND MEMBERS OF THE SOCIETY, AND OF ORDINARY MEMBERS OF THE COUNCIL.

ELECTORAL DISTRICT	DIVISION	NUMBER OF GOVERNORS AND MEMBERS	NUMBER OF ORDINARY MEMBERS OF COUNCIL	ORDINARY MEMBERS OF COUNCIL
A.	BEDFORDSHIRE	96	1	J. H. Howard.
	CHESHIRE	331	2	Hon. J. E. Cross; G. Norris Mid-wood.
	CORNWALL	87	1	W. J. Hosken.
	DERBYSHIRE	144	1	J. T. C. Eadie.
	DORSET	81	1	A. Hiscock.
	HAMPSHIRE AND CHANNEL ISLANDS	232	1	J. Falconer.
	HERTFORDSHIRE	239	1	Richardson Carr.
	LANCASHIRE AND ISLE OF MAN	408	2	W. Harrison; T. H. Miller.
	MIDDLESEX	114	1	G. Taylor.
	MONMOUTHSHIRE	56	1	L. C. Wrigley.
	NORFOLK	712	4	{ F. W. Bett; Davis Brown; Lord Hastings; Henry Overman.
	NORTHAMPTONSHIRE	189	1	Sir C. V. Knightley.
	NORTHUMBERLAND	294	2	G. G. Rea; Viscount Ridley.
	STAFFORDSHIRE	240	2	John Myatt; R. G. Patterson.
	WORCESTERSHIRE	194	1	E. V. V. Wheeler.
	YORKSHIRE, N.R.	168	1	Capt. Clive Behren.
	SCOTLAND	214	1	T. A. Buttar.
		— 3,849	— 24	
B.	BUCKINGHAMSHIRE	155	1	E. Mathews.
	DEVON	162	1	J. H. Hine.
	DURHAM	130	1	C. Middleton.
	ESSEX	210	1	W. Nocton.
	HEREFORDSHIRE	141	1	A. P. Turner.
	LEICESTERSHIRE	197	1	Sir A. G. Hazlerigg.
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	NOTTINGHAMSHIRE	148	1	C. M. S. Pilkington.
	RUTLAND	27	1	Major-Gen. J. F. Brocklehurst.
	SHROPSHIRE	328	2	Lord Harlech; Alfred Mansell.
	SUFFOLK	203	1	Fred Smith.
	SURREY	227	1	E. A. Hamlyn.
	WILTSHIRE	140	1	H. H. Smith.
	YORKSHIRE, W.R.	253	1	E. W. Stanyforth.
	SOUTH WALES	88	1	C. C. Rogers.
		— 3,071	— 18	
C.	BERKSHIRE	191	1	Major H. G. Henderson M.P.
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	CUMBERLAND	113	1	Joseph Harris.
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	GLOUCESTERSHIRE	352	2	H. D. Brocklehurst; W. T. Garne.
	HUNTINGDONSHIRE	43	1	John Rowell.
	KENT	378	2	T. L. Aveling; H. F. Plumtre.
	LINCOLNSHIRE	359	2	Henry Dudding; C. W. Tindall.
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	SOMERSET	117	1	R. J. Bayntun Hippisley.
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	WARWICKSHIRE	242	1	J. W. Glover.
	WESTMORLAND	60	1	C. W. Wilson.
	YORKSHIRE, E.R.	122	1	F. Reynard.
	IRELAND	128	1	R. G. Carden.
	NORTH WALES	191	1	
		— 3,039	— 20	
FOREIGN COUNTRIES		308		
MEMBERS WITH NO ADDRESSES		12		
GRAND TOTALS		10,379	62	

TABLE SHOWING THE NUMBER OF GOVERNORS AND MEMBERS
IN EACH YEAR FROM THE ESTABLISHMENT OF THE SOCIETY.

Year ending with Show of	President of the Year	Governors		Members			Total
		Life	Annual	Life	Annual	Honor- ary	
1839	3rd Earl Spencer	—	—	—	—	—	1,100
1840	5th Duke of Richmond	86	189	146	2,434	5	2,860
1841	Mr. Philip Pusey	91	219	231	4,047	7	4,585
1842	Mr. Henry Handley	101	211	328	5,194	15	5,849
1843	4th Earl of Hardwicke	94	209	429	6,155	15	6,902
1844	3rd Earl Spencer	95	214	442	6,161	15	6,927
1845	5th Duke of Richmond	94	198	527	3,899	15	6,733
1846	1st Viscount Portman	92	201	554	6,105	19	6,971
1847	6th Earl of Egmout	91	195	607	5,478	20	6,391
1848	2nd Earl of Yarborough	93	186	648	5,387	21	6,335
1849	3rd Earl of Chichester	89	178	582	4,643	20	5,512
1850	4th Marquis of Downshire	90	169	627	4,356	19	5,261
1851	5th Duke of Richmond	91	162	674	4,175	19	5,121
1852	2nd Earl of Ducie	93	156	711	4,002	19	4,981
1853	2nd Lord Ashburton	90	147	739	3,928	19	4,923
1854	Mr. Philip Pusey	88	146	771	4,152	20	5,177
1855	Mr. William Miles, M.P.	89	141	795	3,838	19	4,882
1856	1st Viscount Portman	85	139	839	3,896	20	4,979
1857	Viscount Ossington	83	137	896	3,933	19	5,068
1858	8th Lord Berners	81	133	904	4,010	18	5,146
1859	7th Duke of Marlborough	78	130	927	4,008	18	5,161
1860	5th Lord Walsingham	72	119	927	4,047	18	5,183
1861	4th Earl of Powis	84	90	1,113	3,328	18	4,633
1862	H.R.H. The Prince Consort 1st Viscount Portman	83	97	1,151	3,475	17	4,823
1863	Viscount Eversley	80	88	1,263	3,735	17	5,183
1864	2nd Lord Feversham	78	45	1,343	4,013	17	5,496
1865	Sir E. C. Kerison, Bart., M.P.	79	81	1,386	4,190	16	5,752
1866	1st Lord Tredegar	79	84	1,395	4,049	15	5,622
1867	Mr. H. S. Thompson	77	82	1,388	3,903	15	5,495
1868	6th Duke of Richmond	75	74	1,409	3,888	15	5,461
1869	H.R.H. The Prince of Wales, K.G.	75	73	1,417	3,884	17	5,446
1870	7th Duke of Devonshire	74	74	1,511	3,764	15	5,436
1871	6th Lord Vernon	72	74	1,589	3,890	17	5,648
1872	Sir W. W. Wynn, Bart., M.P.	71	73	1,655	3,953	14	5,768
1873	Earl Cathcart	74	62	1,832	3,936	12	5,916
1874	Mr. Edward Holland	76	58	1,944	3,756	12	5,846
1875	Viscount Bridport	79	79	2,058	3,918	11	6,145
1876	2nd Lord Chesham	83	78	2,164	4,013	11	6,349
1877	Lord Skelmersdale	81	76	2,299	4,073	17	6,466
1878	Col. Kingscote, C.B., M.P.	81	72	2,328	4,130	26	6,687
1879	H.R.H. The Prince of Wales, K.G.	81	72	2,453	4,700	28	7,332
1880	9th Duke of Bedford	83	70	2,673	5,083	20	7,928
1881	Mr. William Wells	85	69	2,765	5,041	19	7,979
1882	Mr. John Dent Dent	82	71	2,849	5,059	19	8,080
1883	6th Duke of Richmond and Gordon	78	71	2,979	4,952	19	8,099
1884	Sir Brandreth Gibbs	72	72	3,203	5,408	21	8,776
1885	Sir M. Lopes, Bart., M.P.	71	69	3,356	5,619	20	9,135
1886	H.R.H. The Prince of Wales, K.G.	70	61	3,414	5,569	20	9,134
1887	Lord Egerton of Tatton	71	64	3,440	5,387	20	8,982
1888	Sir M. W. Rilday, Bart., M.P.	68	56	3,521	5,225	16	8,884
1889	HER MAJESTY QUEEN VICTORIA	73	58	3,567	7,153	15	10,866
1890	Lord Moreton	122	58	3,646	6,941	17	10,984
1891	2nd Earl of Ravensworth	117	60	3,811	6,821	19	10,928
1892	Earl of Feversham	111	69	3,781	7,066	20	11,050
1893	1st Duke of Westminster, K.G.	107	74	3,786	7,138	21	11,126
1894	8th Duke of Devonshire, K.G.	113	73	3,788	7,212	22	11,218
1895	Sir J. H. Thorold, Bart.	120	80	3,747	7,179	23	11,149
1896	Sir Walter Gilbey, Bart.	126	83	3,695	7,353	23	11,180
1897	H.R.H. The Duke of York, K.G.	126	83	3,705	7,285	24	11,223
1898	Earl Spencer, K.G.	121	79	3,687	7,182	25	11,094
1899	Earl of Coventry	116	75	3,656	7,009	23	10,879
1900	H.R.H. The Prince of Wales, K.G.	111	71	3,628	6,832	24	10,666
1901	Earl Cawdor	102	70	3,564	6,838	27	10,083
1902	H.R.H. Prince Christian, K.G.	100	69	3,500	5,955	26	9,650
1903	H.R.H. The Prince of Wales, K.G.	99	62	3,439	5,771	27	9,398
1904	16th Earl of Derby, K.G.	98	68	3,375	5,906	32	9,477
1905	Lord Middleton	95	72	3,270	5,808	31	9,276
1906	Mr. F. S. W. Cornwallis	91	155	3,132	8,189	30	9,600
1907	Earl of Yarborough	91	174	3,076	6,299	29	9,669
1908	Duke of Devonshire	89	178	3,019	6,442	30	9,758
1909	Earl of Jersey, G.C.B.	91	177	2,951	6,696	31	9,948
1910	Sir Gilbert Greenall, Bart.	88	166	2,878	6,984	31	10,095
1911	HIS MAJESTY KING GEORGE V.	85	168	2,805	7,191	30	10,270

STATEMENT made to the Council by the Chairman of the Finance Committee, on presenting the Accounts for the year 1911.

Mr. ADEANE, in presenting, on behalf of the Finance Committee, the accounts and balance-sheet for the year 1911, said it would be observed that the accounts had been presented a month earlier than usual. They were doing that at the request of the Journal Committee, who were very anxious to bring out the Journal a month earlier, if possible.

Taking the statement of income and expenditure for 1911, they would observe on the income side of the account an increase of 457*l.* for the year. This was largely due to the great number of new members Sir Ailwyn Fellowes had been able to bring in from the county of Norfolk. On the side of expenditure there was an increase for the year of 898*l.*, and he would just remark on the figures where the increase was shown. Under General Administration there was an increase for printing of 107*l.*, which was due to the large increase of new members last year, who all received copies of the Journal, which had to be printed expressly for them, and to the cost of the list of Members, printed every three years, which fell due in 1911. There was also a sum of 258*l.* for the insurance of the staff, the first year's premium having been paid out of the Ordinary account, but the annual payment had now been arranged for by a separate insurance fund which the Council set up last year. Rent, &c., showed an increase of 170*l.*, due to the heavy amount of painting done to the whole of the outside of the house and the inside of the Council chamber. There were 140*l.* for the new edition of "Elements of Agriculture," being one-third of the cost. Then, under the head of other scientific departments, there was an increase of 200*l.*, due to the increased grant which the Council made to the Royal Veterinary College.

The total income for the year was 9,791*l.*, and the total expenditure 9,769*l.*, which left a credit balance of 22*l.*

Before referring to the balance-sheet, he would like to make an explanation with regard to the Insurance Fund. It would be remembered that last year a sum of 9,171*l.*, invested in Consols, was transferred into the hands of Trustees for the purpose of providing the premium on the insurances which were effected in the interests of the staff. This sum still remained an asset of the Society, but as it was held in trust for a certain purpose, the Auditors were of opinion that it should be taken out of the balance-sheet, and it had therefore been transferred to a statement they had in their hands giving a list of the various funds held in trust by the Society. This had made a considerable difference in the figures, which he would explain.

Taking the balance-sheet, on the debtor side the capital showed a decrease of 6,891*l.* The capital on December 31, 1910, was 56,375*l.*, and during the past year the sum of 2,600*l.* had been added, giving a total sum of 58,975*l.* From this sum must be taken the 9,171*l.* which had been transferred to the Insurance Fund, and also the sum of 320*l.*, which they had written off as depreciations, giving a total sum to be taken off of 9,491*l.*, which left their present capital at 49,484*l.*

On the creditor side there was a difference in the Reserve Fund of 6,171*l.* In 1910 the reserve stood at 49,600*l.*, and in 1911 they had added 3,000*l.* to reserve, giving a total figure of 52,600*l.* From that they had taken 9,171*l.* for the Insurance Fund, which left the Reserve Fund at 43,429*l.*

FORECAST OF ORDINARY RECEIPTS AND EXPENDITURE FOR 1912.

(Other than in respect of the Show.)

Prepared by direction of the Finance Committee on the basis of the recommendations of September 21, 1905, made by the Special Committee.

Actual
Figures
for 1911.

Receipts.

		£
8,151	From Subscriptions for 1912 of Governors and Members	8,150
110	From Interest on Daily Balances	100
1,220	From Interest on Investments	1,270
310	From Sales of Text Book, Pamphlets, &c. (This does not include the sales of Journals, which are deducted from the cost of production)	300
9,791		9,820

<i>Expenditure.</i>		£
1,543	Salaries of Secretary and Official Staff	1,588
140	Pensions to Officials	140
877	Rent, Lighting, Cleaning, Wages, &c. (say)	700
528	Printing and Stationery	450
179	Postage and Telegrams	200
329	Miscellaneous	400
730	Journal	880
615	Chemical Department	750
259	Botanical Department	250
200	Zoological Department	200
402	Veterinary Department	400
195	Examinations for National Diplomas (R.A.S.E. Share)	200
2,500	Contribution from Subscriptions to Show Fund	2,500
8,484		8,656

<i>Exceptional Expenditure.</i>		£
259	<i>Insurance of Staff</i>	—
383	Tuberculosis Experiment	300
156	<i>Trials of Potato Raisers</i>	—
—	Trials of Seed Drills	150
71	<i>Plans of Buildings for small Holdings</i>	—
50	Special Grant to Botanical Committee	50
25	Library Catalogue and Binding Books	50
278	Elements of Agriculture—New Edition (balance of cost)	278
43	<i>Hill's Bequest: Excess Expenditure</i>	—
20	<i>Lecture by Professor Biffen</i>	—
9,769	Total Estimated Expenditure	9,484
		£
Estimated Receipts		9,320
Estimated Expenditure		9,484
22	Estimated Receipts over Expenditure	336

Turning to the estimate of receipts and expenditure for the present year, it was estimated that for the year 1912 the receipts from Subscriptions would be 8,150*l.*, Interest on Daily Balances 100*l.*, Interest on Investments 1,270*l.*, Sales of Text Book, Pamphlets, &c., 300*l.*, giving a total estimated income of 9,820*l.* The expenditure was estimated as follows:—Salaries of Secretary and Officials, 1,586*l.*; Pensions to Officials, 140*l.*; Rent, Lighting, Cleaning, Wages, &c., 700*l.*; Printing and Stationery, 450*l.*; Postage and Telegrams, 200*l.*; Miscellaneous, 400*l.*; Journal, 880*l.*, this being 150*l.* more than last year, because the Council had decided that in future the Journal should be bound in cloth; Chemical, 750*l.*, an increase again of 150*l.*, owing to the addition to Dr. Voelcker's salary, which the Council decided last year should begin as from January 1 last; Botanical, 250*l.*; Zoological, 200*l.*; Veterinary, 400*l.*; Examinations for National Diplomas, 200*l.*; Contribution from Subscriptions to the Show Fund, 2,500*l.* The estimated ordinary expenditure for the year would be 8,656*l.*

With regard to exceptional expenditure for the year, they estimated that the Tuberculosis experiment would cost 300*l.*, the Trials of Seed Drills 150*l.*, Special Grant to the Botanical Department 50*l.*, Library Catalogue and Binding Books 50*l.*, and balance of cost of the new "Elements of Agriculture" 278*l.*, giving a total estimated expenditure of 9,484*l.* The total estimated receipts were 9,820*l.*, the total estimated expenditure 9,484*l.*, giving an estimated balance of receipts over expenditure of 336*l.*

A suggestion by Mr. MAY that a note should appear in the balance-sheet explaining the market value of the Consols standing in the Society's name at the end of the year 1911 was adopted by the Council.

Royal Agricultural Society of England.

STATEMENT OF FUNDS HELD BY THE SOCIETY IN TRUST OR WHICH ARE NOT CONSIDERED AVAILABLE FOR GENERAL PURPOSES, DECEMBER 31, 1911.

To Hills' Bequest for Pot-culture Experiments	£ 9,000 0 0	By 8126l. 8s. 2d. Consols at cost	£ 9,000 0 0
To Fund provided by Sir Walter Gilbey for Endowment of Lectureship at Cambridge until July 31, 1917, when any balance on this account will become the property of the Society	1,032 18 8	By 1140l. Metropolitan Water A Stock at cost	998 1 0
		By amount included in the Society's Sundry Creditors' Account :—	£ s. d.
		Fund uninvested	1 19 0
		Income over expenditure	32 18 8
			34 17 8
	£1,032 18 8		£1,032 18 8
To Superannuation and Insurance Fund :— Amount set aside in accordance with Declaration of Trust of July 26, 1911	9,171 5 0	By Investments in names of Trustees of Superannuation and Investment Funds, viz.:— 11,000l. Consols. at cost	9,171 5 0
Accumulations to December 31, 1911	187 6 4	39l. 16s. 2d. West Australian 3½c at cost	38 14 9
		19l. 0s. 8d. Queensland 3½c, at cost	18 8 1
		Cash at Bank	9,228 7 10
	£9,358 11 4		130 3 6
			£9,358 11 4

Examined, audited, and found correct, this 25th day of January, 1912.

THOMAS MCROW, Secretary.
WELTON, JONES & CO., Accountants.

JONAS M. WEBB,
NEWELL P. SQUAREY,

Auditors on behalf of the Society.

ROYAL AGRICULTURAL

Dr.

BALANCE-SHEET,

Corresponding figures for 1910		£	s	d.	£	s	d.	£	s	d.
	To SUNDRY CREDITORS -									
1,666	Sundry Creditors				2,693	0	11			
177	Subscriptions received in 1911 in advance . . .				10	1	0			
1,803	Show Receipts received in 1911 and belonging to 1912				448	12	9			
3,676								3,240	14	8
	To CAPITAL -									
47,716	As at December 31, 1910				56,375	9	3			
	Less Transferred to the Trustees of the Insurance Fund (£11,000 at 83½ cost				9,171	5	0			
					47,204	4	3			
	BALANCE FROM SHOW FUND—									
	Contribution from Ordinary Income	2,500	0	0						
	Less Loss on Norwich Show	532	3	8						
7,983					1,967	16	4			
503	Life Compositions received in 1911				553	0	0			
53	Donations towards the Society's Funds				57	5	0			
403	Credit Balance on Ordinary Income and Expenditure Account				22	19	2			
56,716					49,805	4	9			
	DEPRECIATIONS written off, viz.:-									
	Fixtures	33	8	2						
	Furniture	142	19	4						
	Machinery	8	1	9						
	Show Plant	86	8	9						
	Buildings at Woburn	50	0	0						
342					320	18	0			
56,375								49,484	6	

£60 051

£52,725 1

THOMAS MCROW, *Secretary*
WELTON, JONES & CO., *Accountants*.

SOCIETY OF ENGLAND.

ix

DECEMBER 31, 1911.

(72.

Corresponding figures for 1910		£ s. d.	£ s. d.
49,600	By Reserve Fund 32 333½ 5s 6d Consols, at cost (average cost 83½) (Value on December 31, 1911 at 77½ = 40,127½ 9s 1d.)		43,428 15 0
2,000	By LEASE OF 16 BEDFORD SQUARE Less Amount written off	2,600 0 0 100 0 0	2,500 0 0
445	By FIXTURES— Value at December 31, 1910 Less Depreciation at 7½ per cent.	445 0 2 33 8 2	412 1 0
1,430	By FURNITURE— Value at December 31, 1910 Less Depreciation at 10 per cent.	1,429 13 5 142 19 4	1,286 14 1
1,500	By PICTURES (500L.) and BOOKS (1,000L.)		1,500 0 0
81	By MACHINERY— Value at December 31, 1910 Less Depreciation at 10 per cent.	80 17 10 8 1 9	72 16 1
864	By SHOW PLANT— Value at December 31, 1910 Less Depreciation at 10 per cent. Added during 1911	864 8 3 86 8 9 777 19 6 870 5 2	1,648 4 8
450	By BUILDINGS FOR POT EXPERIMENTS AT WOBURN— As per Account at December 31, 1910 Less Depreciation	450 0 0 50 0 0	400 0 0
679	By SUNDRY DEBTORS		1,169 13 11
2,250	By CASH AT BANKERS AND IN HAND— Ordinary Account Reserve Fund Account In Hand	133 7 8 120 12 5 52 16 6	306 16 8
2,402			
400,051			252,728 1 8

Examined, audited, and found correct, this 25th day of January, 1912.

JONAS M. WEBB,
NEWELL P. SQUAREY, } Auditors on behalf of the Society.

STATEMENT OF ORDINARY INCOME

The Expenditure in this account includes not only cash payments,

Correspond-
ing figures
for 1910

Income.

		£	s	d	£	s	d
	ANNUAL SUBSCRIPTIONS:—						
885	<i>Governors</i> Subscriptions for 1911	911	10	0			
112	<i>Members</i> : Received in 1910, but belonging to 1911	174	13	0			
6,424	Subscriptions for 1911	6,703	1	0			
163	Subscriptions for 1911 (additional)	175	19	0			
75	Subscriptions for previous years	56	1	0			
	LIFE GOVERNORS AND MEMBERS:—						
163	Annual Contributions	129	19	0			
7,822					8,151	3	0
	MISCELLANEOUS:—						
105	Interest on Daily Balances	109	18	10			
1,118	Income on Investments	1,220	15	5			
52	Sales of Pamphlets, Diagrams, &c.	49	15	2			
144	Sales of Text Book	241	15	7			
33	Miscellaneous	17	17	0			
1,512					1,640	2	0
	Rent of 12 Hanover Square	310	15	0			
	Less Rent paid	310	15	0			

£9 334£8,791 5 0

THOMAS MORROW, *Secretary*.
WELTON, JONES & CO., *Accountants*.

AND EXPENDITURE FOR THE YEAR 1911.

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but all liabilities in connection with the year's transactions.

Corresponding figures for 1910

Expenditure.

		£	s.	d.	£	s.	d.
6	GENERAL ADMINISTRATION:—						
1,538	Salaries of Official Staff	1,542	13	0			
	Insurance of Official Staff	25	19	2			
215	Pensions to Officials	110	0	0			
100	Professional Charges:—Auditors' Fees, &c.	96	11	6			
711	Rent, Rates, Taxes, Insurance, and House Expenses (including Painting outside of House, Council Chamber, and Waiting Room)	877	6	11			
28	Binding and Purchase of Books	30	6	0			
421	Printing and Stationery	528	0	2			
198	Postage and Telegrams	178	15	0			
82	Carriage of Parcels and Travelling Expenses (including annual visit to Woburn)	71	19	5			
75	Advertising and Miscellaneous Office Expenses	100	5	9			
3,377					3,824	16	11
	JOURNAL OF THE SOCIETY, VOL. 72:—						
500	Printing, Binding, &c.	572	0	0			
200	Postage, Packing, and Delivery	205	0	0			
238	Editing and Literary Contributions	280	0	0			
57	Illustrations	30	0	0			
1,055		1,087	0	0			
		£	s.	d.			
70	Less Sales (Vol. 71 and earlier)	82	0	0			
20	Credit Balance from Vol. 71	24	19	1			
265	Advertisements (Vol. 72)	270	0	0			
355		356	19	1			
700	ELEMENTS OF AGRICULTURE:—				730	0	11
82	Printing and Binding Old Edition	47	10	2			
	New Edition (One-third cost)	130	4	10			
50	Editing New Edition and Contributions	91	0	0			
132					277	15	0
40	PAMPHLETS:—				29	11	1
	Printing, &c.						
615	LABORATORY:—				615	3	2
	Salaries, Wages, &c.						
	OTHER SCIENTIFIC DEPARTMENTS:—						
250	Botanist's Salary and Expenses	300	0	0			
200	Zoologist's Salary	200	0	0			
200	Grant to Royal Veterinary College	400	0	0			
2	Medals for Proficiency in Cattle Pathology	2	6	0			
652		902	6	6			
	NATIONAL DIPLOMA IN AGRICULTURE:—						
181	Honoraria and Expenses of Examiners	170	19	9			
22	Travelling Expenses of Officials	25	19	6			
34	Hotel Expenses of Examiners and Officials	29	19	3			
27	Printing, Stationery, and Postage	23	18	0			
13	Writing Diplomas	16	10	0			
49	Salaries for Assistants	49	10	0			
326		318	16	6			
90	Less Entry Fees and Sales of Examination Papers	88	8	6			
236		228	8	0			
118	Less Highland and Agricultural Society's Molety	114	4	0			
118					114	4	0
	NATIONAL DIPLOMA IN DAIRYING:—						
20	Hire of Premises, 101. 10s.; Milk, 301. 16s. 3d.	41	0	3			
41	Fees to Examiners	40	11	4			
23	Hotel and Travelling Expenses	25	8	3			
3	Printing and Postage	10	11	6			
87		117	17	4			
31	Less Entry Fees and Sales of Examination Papers	30	16	9			
50					81	0	7
	EXTRA EXPENDITURE:—						
	Cult Experiment at Woburn	342	10	2			
	Trials of Potato Raisers and Sorters	155	17	7			
	Competition for Plans of Buildings for Small Holdings	71	3	8			
	Hills' Bequest:—Excess expenditure for 1910	32	16	3			
	Lecture by Professor Biffen	26	1	0			
	Library Catalogue	25	0	0			
675		693	8	8			
2,500	CONTRIBUTION TO SHOW FUND	2,500	0	0			
463	CREDIT BALANCE CARRIED TO BALANCE-SHEET	22	19	2			
£9,334		£9,791	5	0			

Examined, audited, and found correct, this 25th day of January, 1912.

JONAS M. WEBB, }
NEWELL P. SQUAREY, } Auditors on behalf of the Society.

STATEMENT OF RECEIPTS AND EXPEN-

JUNE 26 TO

Corresponding figures for 1911

£

3,235

—

4,108

Receipts.

£ s. d.

2,000 0 0

Subscription from Norwich Local Committee

Prizes given by Agricultural and Breed Societies

Do. do. Norwich Local Committee

4,165 15 0

FEES FOR ENTRY OF IMPLEMENTS:—

1,246

150

112

6,499

Implement Exhibitors' Payments for Stedding

Non-Members' Fees for Entry of Implements

Fees for Entry of "New Implements"

5,716 10 0

FEES FOR ENTRY OF LIVE STOCK:—

£ s. d.

2,508

— 4

2,512

350

581

24

64

3,542

By 2,840 Members' Entries @ 1l.

20 Substituted Entries @ 5s.

2,847 5 0

By 131 Non-Members' Entries @ 2l.

262 0 0

By Horse Boxes (595 @ 1l.; 41 @ 2l.)

677 0 0

By 63 Entries @ 10s.

31 10 0

281 Entries @ 5s.

64 15 0

3,882 10 0

FEES FOR ENTRY OF POULTRY:—

31

164

195

By Members:—271 Entries @ 2s. 6d.

By Non-Members:—347 Entries @ 3s. 6d.

163 14 6

199 12 0

OTHER ENTRY FEES:—

88

56

6

74

47

—

271

Produce

Horse-shoeing Competition

Butter-making Competitions

Horse-jumping Competitions

Farm Prize Competition

Plantation Competition

365 8 6

CATALOGUE:—

20

5

331

14

848

32

1,257

34

1,293

Extra Lines for Particulars of Implement Exhibits

Woodcuts of "New Implements"

Advertising in Catalogue

Sales of Implement Section of Catalogue (including bound copies)

Sales of Combined Catalogue

Sales of Jumping Programme

987 5 2

Less Commission on Sales

35 16 4

901 8 10

MISCELLANEOUS RECEIPTS:—

490

525

103

60

30

13

10

10

1,256

Admission to Horticultural Exhibition

Amount received from Refreshment Contractor

Rent for Railway Offices

Premium for Cloak Room

Rent for Board of Agriculture Pavilion

Admission to Royal Pavilion

Nurse Cows

Miscellaneous

736 7 0

£20,329

Carried forward

£18,987 11 4

DITURE OF THE SHOW AT NORWICH,

xiii

30, 1911.

Correspond-
ing figures
for 1910.

Expenditure.

£		£ s. d.	£ s. d.
	COST OF ERECTION OF SHOWYARD:—		
1,403	Transferring Society's Permanent Buildings from Liver- pool to Norwich (including taking down and re- erecting)	1,230	10 0
200	Hire of Second Entrances	—	—
390	Fencing round Showyard	471	15 7
213	Stewards' Pavilion	—	—
1,250	Implement Shedding	1,292	15 0
7,950	Stock Shedding	3,378	12 8
206	Poultry and Produce Shed	248	11 4
212	Dairy	242	13 0
54	Fodder Shed and Office	87	18 0
605	Grand Stand and Large Ring	387	1 4
121	Horse-shoeing Shed and Stabling	126	12 6
772	Various Offices and Stands	717	8 3
338	Printing Signs and fixing do., Fencing and Judging Rings	580	15 10
199	Education and Forestry Exhibition	190	5 6
7	Insurance	10	11 3
18	Ironmongery	30	8 8
1,154	Hire of Canvas and Felt	1,187	12 1
574	General Labour and Horse Hire (including Society's Clerk of Work)	698	6 7
10,553		10,782	0 7
40	Less 80 Flag Poles at 10s.	40	0 0
10,513			10,742 0 7
	SURVEYOR:—		
335	Salary, 3007; Travelling Expenses to London, 317. 10s.; Petty Cash, 31 4s. 2d.		334 14 2
	PRINTING:—		
081	Printing of Prize Sheets, Entry Forms, Admission Orders, Circulars to Exhibitors, Prize Cards, &c., Tickets, and Miscellaneous	611	6 11
184	Programmes for Members	125	9 11
35	Plans of Showyard	20	10 0
834	Printing of Catalogues	850	13 3
66	Binding of Catalogues	73	16 1
118	Printing Awards	58	6 4
10	Programmes of Jumping Competitions	11	15 0
1,957			1,766 17 6
	ADVERTISING:—		
166	Advertising Closing of Entries in Newspapers	184	11 6
314	Advertising Show in Newspapers	177	6 7
401	Bill Posting	310	1 6
335	Printing of Posters and Postcards	290	18 0
55	Press Visit before Show	89	5 6
1,436			970 3 10
	POSTAGE, CARRIAGE, &c.:—		
100	General Postage	105	18 10
35	Postage of Badges to Members	34	5 3
6	Carriage of Luggage	8	10 7
141			148 14 8
	AMOUNT OF MONEY PRIZES AWARDED, including 4,165. 15s. given by various Societies and Norwich Local Committee (see receipt per contra).		9,614 5 0
	COST OF FORAGE FOR LIVE STOCK:—		
1,059	Hay, 3267. 18s. 8d.; Straw, 4331. 17s. 10d.; Green Food, 3671. 18s.; Wages, 461. 8s. 9d.; Stewards' Expenses, 107.		1,185 0 10
	JUDGES' FEES AND EXPENSES:—		
553	Judges of Miscellaneous Implements, 241. 4s. 6d.; Horses, 1037. 12s. 4d.; Cattle, 1511. 0s. 9d.; Sheep, 1491. 7s. 5d.; Pigs, 317. 6s. 2d.; Poultry, 191. 10s.; Butter, 71. 6s.; Butter- making, 81. 11s. 6d.; Cheese, 71. 18s.; Cider and Perry, 251. 14s. 8d.; Bread, 41. 3s.; Wool, 91. 8s. 6d.; Horse-shoeing, 301. 5s. 8d.; Luncheons, 161. 10s.		589 4 6
52	Badges for Judges and other Officials		41 14 3
53	Bonnettes		45 1 6
£25,776	Carried forward		£25,537 16 10

STATEMENT OF RECEIPTS AND EXPENDITURE

Corresponding figures for 1910

Receipts (contd.).

		£	s.	d.	£	s.	d.
20,329	Brought forward				18,967	11	4
ADMISSIONS TO SHOWYARD:—							
622	Monday, June 26, @ 5s.		219	0	0		
2 347	Tuesday, June 27, @ 2s. 8d.		868	2	0		
3 554	Wednesday, June 28, @ 2s. 6d.		2,430	7	9		
2 104	Thursday, June 29, @ 1s.		3,182	15	6		
1 940	Friday, June 30, @ 1s.		768	18	6		
735	Season Tickets		32	14	7		
425	Day Tickets		611	0	0		
11,753						8,172	18 4
ENTRANCES TO HORSE RING:—							
150	Tuesday, June 27		114	2	0		
144	Wednesday, June 28		156	10	0		
273	Thursday, June 29		112	0	0		
232	Friday, June 30		40	8	0		
761	Tickets sold for Reserved Enclosure		604	19	4		
2,180						1,123	19 4
SALES:—							
127	Sales of Produce at Dairy		157	8	1		
350	Auction Sales in Showyard and Share of Commission		261	12	11		
477						419	1 0

—	Debit Balance	532	3	8
634,739		£29,215	13	8

Examined, audited, and found correct, this 27th day of November, 1911.

THOMAS MCROW, Secretary.
WELTON, JONES & Co, Accountants.

JONAS M. WEBB,
H. J. GREENWOOD,
NEWELL P. SQUARFY. } Auditors on
behalf of
the Society.

Corresponding figures for 1910.

25,776

Expenditure (contd.).

	£	s.	d.	£	s.	d.
Brought forward				25,437	16	10
GENERAL ADMINISTRATION:—						
Stewards:—Personal and Railway Expenses	142	3	6			
Assistant Stewards:—Personal and Railway Expenses	149	6	7			
Official Staff:—Extra Clerks, 97l. 6s.; Lodgings, 46l. 19s. 6d.; Maintenance of Clerks, 41l. 19s. 1d.; Travelling Expenses, 8l. 15s.; Secretary's Hotel and Travelling Expenses, 68l. 7s. 4d.	2n3	6	11			
Finance Office:—Superintendent of Turnstiles, 10l.; Grand Stand Men, 40l. 8s. 4d.; Turnstile Men, 32l.; Bank Clerks, 19l. 10s. 6d.	101	19	10			
Awards Office:—Clerks, 29l. 8s. 11d.; Awards Boys, 12l. 15s. 4d.	42	4	3			
				689	1	1
General Management:—						
Foreman and Assistant Foremen	91	6	3			
Yardmen and Foddermen	36	9	6			
Door and Gate Keepers	39	6	0			
Veterinary Department:—Veterinary Inspectors	94	10	6			
Engineering Department:—Consulting Engineer and Assistants, 109l. 1s. 1d.; Wages to Workmen, 10l.; and Maintenance, 16l. 12s. 8d.	135	13	9			
Police, &c.:—Metropolitan Police, 681l. 0s. 8d.; Commissioners, 29l. 8s. 4d.	610	9	0			
				1,010	15	0
Dairy:—Staff, 128l. 16s. 4d.; Milk, 84l. 3s.; Cream, 40l. 7s. 6d.; Ice, 17l. 0s. 1d.; Utensils, 66l. 8s.; Salt, 3l. 12s.; Butter Tests, 20l. 16s. 3d.; Milk Analyses, 15l. 0s. 1d.; Carriage, 2l. 13s. 1d.; Engine, 8l. 18s. 10d.; Fuel, 3l. 4s. 7d.; Cheese and Butter Boxes, 3l. 11s.; Lodgings, 11l. 16s. 8d.; Refreshments, 9l. 0s. 8d.; Labour, 3l. 17s.; Miscellaneous Payments, 5l. 5s. 7d.						
Poultry:—Superintendent, 11l. 2s.; Penning and Feeding, 13l. 4s.; Carriage, &c., 13l. 14s.	38	0	0			
Horse-shoeing:—Hire of Forges, 20l. 2s. 8d.; Gratuities, 6l. 12s. 6d.; Wages, 7l. 2s. 4d.; Iron, 4l. 0s. 3d.; Fuel, 1l. 15s. 3d.	39	12	10			
Produce:—Analyses of Cider	23	16	3			
				518	0	4
Farm Prize Competition:—Expenses of Judging Farms, &c. Horticulture:—Hire of Tents, 262l. 3s. 3d.; Judges, 27l. 10s. 6d.; Wages, 73l. 8s. 9d.; Carriage, 65l. 16s. 6d.; Medals, 43l. 14s. 6d.; Printing, 19l. 3s. 2d.; Miscellaneous, 4l. 4s. (For admissions see Miscellaneous Receipts)						
				498	9	7

GENERAL SHOWYARD EXPENSES:—

Storage of Plant	—					
Band	84	0	0			
Official Luncheons	66	17	6			
Ambulance	41	10	0			
Telephone Extension	48	11	0			
Telegraph Extension	40	10	0			
Hire of Chairs	54	2	10			
Plans of Showyard	15	3	6			
Hire of Furniture	51	0	0			
Fencing	—					
Education and Forestry	95	10	0			
Billposting in Showyard	6	16	6			
Gas and Fuel	9	5	0			
Medals	17	9	7			
Carriage	1	15	11			
Miscellaneous	29	16	1			
Gratuities	—					
Fire Station	10	0	0			
Rosette Baskets	—					
Hire of Weighbridge	10	9	0			
Bathchairs	—					
Forage for Stewards' Ponies	2	4	8			
Gravel, Sand, &c.	44	15	5			
				629	17	0
Credit Balance						

£34,739

£39,215 13 8

Contribution from Ordinary Funds of the Society to the Show

Fund £2,500 0 0

Less:—Actual loss on the Norwich Show 532 3 8

Balance carried to Reserve Fund £1,967 16 4

NORWICH SHOW, 1911.

Statement showing the distribution of the Prizes awarded in the several sections of the Norwich Show, with comparative figures of the Liverpool Show, 1910.

Corresponding figures for 1910.	STATEMENT OF PRIZES AWARDED —		
	£	£	s. d.
2,664	Horses	3,008	0 0
2,464	Cattle	2,656	10 0
1,886	Sheep	1,815	10 0
677	Pigs	695	15 0
352	Poultry	392	0 0
207	Cheese and Butter	92	0 0
52	Cider and Perry	49	0 0
66	Wool	57	0 0
—	Bread	3	10 0
41	Horse-shoeing	46	10 0
46	Butter-making	46	10 0
450	Fairs	480	0 0
202	Horticulture	232	0 0
40	Contribution to Bee Department	40	0 0
9,347		9,611	5 0
2,116	Less — Prizes given by various Societies, &c.	2,130	15 0
1,992	Prizes given by Norwich Local Committee	2,035	0 0
4,108		4,165	15 0
5,239		£5,448	10 0

[Copies of the full Report of any of the Council Meetings held during the year 1911 may be obtained on application to the Secretary, at 16 Bedford Square, London, W.C.]

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

Minutes of the Council.

WEDNESDAY, JANUARY 25, 1911.

At a Monthly Council, held at 16 Bedford Square, W.C., the Right Hon. AILWYN E. FELLOWES (Acting-President) in the Chair:—

Present:—Trustees.—Mr. J. Bowen-Jones, the Earl of Coventry, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. O. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Sir Gilbert Greenall, Bart., the Hon. Cecil T. Parker.

Other Members of the Council.—Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Major-General J. F. Brocklehurst, C.V.O., C.B., Mr. Davis Brown, Mr. R. G. Carden, Mr. Richardson Carr, Mr. R. A. Cooper, M.P., the Hon. John E. Cross, Mr. J. Falconer, Mr. Howard Frank, Mr. J. W. Glover, Mr. R. M. Greaves, Mr. E. A. Hamlyn, Sir A. G. Hazlerigg, Bart., Major H. G. Henderson, M.P., Mr. Bayntun Hippiusley, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. John Howard Howard, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. Henry Overman, Mr. R. G. Patterson, Mr. W. A. Prout, Mr. F. Reynard, Mr. C. Coltman Rogers, Mr. John Rowell, Mr. W. Scoby, Mr. Fred Smith, Mr. E. W. Stanyforth, Mr. George Taylor, Mr. E. V. V. Wheeler, and Mr. C. W. Wilson.

The following Members of the Norwich Local Committee were also present:—The Lord Mayor of Norwich, Lord Hastings, Mr. H. P. Blofield, and Mr. E. W. Beck (Local Secretary).

The ACTING-PRESIDENT, in opening the proceedings, said he thought it would be pleasing to Members of the Council to know that he had received a letter from their President, His Majesty the King, signed by his own hand, in the following terms (For text of His Majesty's letter see page 328.)

That letter, Mr. Fellowes said, only showed once more the interest His Majesty took in that great Society, carrying on what had been done by his predecessors in the past. Therefore he was perfectly certain that it would be the wish of the Council that the following address should be sent to His Majesty:—

"The Council of the Royal Agricultural Society of England have received with gratitude and high appreciation the terms of the letter addressed to the Acting-President by His Majesty the King, President of the Society, and they beg to assure His Majesty of their deep sense of the very great interest which His Majesty has always taken in the work of the Society, and their respectful thanks for the good wishes for the success of the Norwich Show to be held under his Presidency."

Mr. BOWEN-JONES had great pleasure in seconding the proposition made by the Acting-President. The gracious communication sent by His Majesty to Mr. Fellowes would give the utmost satisfaction, not only to the Members of the Society, but to agriculturists and farmers generally throughout the country. It was also a very good augury that His Majesty was taking the Presidency this year, when so many colonials and foreign representatives of different countries would be in England. His Majesty's action in becoming their President in 1911 would, he was sure, give a great stimulus to agriculture, not only in this country, but throughout the whole of the British Empire.

The ACTING-PRESIDENT said that one of the oldest Members of the Council had come to the ripe old age of fourscore years; he alluded, of course, to Prince Christian. From all parts of the country and of the Empire letters of congratulation had been sent to His Royal Highness congratulating him on that happy event, and the Royal Agricultural Society, with which he had been so closely connected for so many years, should not be behindhand in sending an address, which he begged to move as follows:—

"This Council desire to convey to His Royal Highness Prince Christian of Schleswig-Holstein, K.G., their respectful congratulations on the occasion of the celebration by His Royal Highness of the eightieth anniversary of his birth. The Council are mindful of the many services which His Royal Highness has so graciously rendered to the Society as a Member of the Council, a Vice-President, a Trustee, and as President of the Society in the year 1902, when the Show was held in the city of Ourlisle, and they sincerely trust that His Royal Highness may be spared to continue the services so ungrudgingly given to the Society since his election as a Governor in the year 1875."

The Hon. O'EOIL PARKER had the honour to second the resolution so ably moved by their Acting-President. Those who had worked with His Royal Highness on the Council for the last twenty-two years were aware what a keen interest he had taken in the business of the Society, and it was the least they could do to offer him their hearty congratulations on reaching so ripe an age.

Mr. FELLOWES said that, in taking the chair for the first time as their Acting-President, he hoped they would allow him to express his deep sense of gratitude for the great honour they had done him in electing him to that office. He trusted he would have—as, indeed, he knew he would have—the hearty and loyal co-operation of every Member of the Council, as well as of their staff.

The minutes of the last meeting of the Council, held on December 7, 1910, were taken as read and approved.

Major G. Noble, Bedford Court, Worcestershire, was elected a Governor, and 189 duly nominated candidates were admitted into the Society as Members under By-law 2.

Sir JOHN THOROLD, in presenting the Report of the Committee of Selection, called attention to the large number of new Members which had been secured by the Acting-President in the county of Norfolk. Of course, the fact of the Show being held at Norwich this year was some incentive to people to join the Society. Mr. Fellowes had, however, got them upwards of 200 new Members, and he could only say he hoped other Members of the Council would follow his good example.

A letter from the Central Committee of Delegates from the Agricultural Societies in Hampshire, conveying a copy of a resolution urging the necessity of the establishment of a "National Agricultural Research Station," under Part I. of the Development and Road Improvement Funds Act, 1909, was, on the motion of Mr. ADEANE, referred to the Special Committee.

The seal of the Society was affixed to the deed of appointment of Mr. Cornwallis as a Trustee of the Queen Victoria Gifts Fund, in the room of the late Earl Spencer.

Other business having been transacted, the Council adjourned until Wednesday, February 22, 1911.

WEDNESDAY, FEBRUARY 22, 1911.

At a Monthly Council, held at 16 Bedford Square, W.C., the Right Hon.

ALWYN E. FELLOWES (Acting-President) in the Chair :—

Present :—Trustees.—Mr. J. Bowen-Jones, Mr. F. S. W. Cornwallis, the Duke of Devonshire, Lord Middleton, Lord Moreton, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Sir Gilbert Greenall, Bart., the Earl of Northbrook, the Hon. Cecil T. Parker.

Other Members of the Council.—Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Major-General J. F. Brocklehurst, C.V.O., C.B., Mr. Davis Brown, Mr. R. A. Cooper, M.P., the Hon. John E. Cross, Mr. H. Dudding, Mr. Howard Frank, Mr. W. T. Garne, Mr. J. W. Glover, Mr. R. M. Greaves, Mr. E. A. Hamlyn, Lord Harlech, Mr. W. Harrison, Sir A. G. Hazlerigg, Bart., Major H. G. Henderson, M.P., Mr. Arthur Hiscock, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. W. Nocton, Mr. R. G. Patterson, Mr. H. F. Plumptre, Mr. W. A. Prout, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Mr. H. H. Smith, Mr. E. W. Stanforth, Mr. C. W. Tindall, Mr. A. P. Turner, and Mr. E. V. V. Wheeler.

The following Members of the Norwich Local Committee were also present :—Lord Hastings, Mr. H. P. Blofield, Mr. G. M. Chamberlin, and Mr. E. W. Beck (Local Secretary).

At the request of the Acting-President, the SECRETARY read a letter which had been received from Sir Arthur Bigge stating that His Majesty the King had received with much satisfaction the address passed by the Council at their last meeting expressing thanks for the letter received from His Majesty as President of the Society.

A letter had also been received from H.R.H. Prince Christian acknowledging the kind congratulations and good wishes of the Council on the occasion of the celebration by His Royal Highness of his eightieth birthday. The letter stated that His Royal Highness had always been deeply interested in agriculture, especially in the work done by the Society, and expressed his hopes still in the future to assist in all that was being done by the Council for the good of agriculture in England.

The ACTING-PRESIDENT said it was with very deep regret that he had to acquaint the Council officially with the death of Earl Cawdor, who had been President of the Society in the year 1901, when the Show was held at Cardiff. Lord Cawdor had been elected a Member of Council in 1882, and a Trustee of the Society in 1900, in which office he continued until his death. He had filled with distinction many important public positions in the country's service, and although his public duties prevented his regular attendance at their meetings during the past few years, his colleagues on the Council would recall with gratitude the services he rendered to the Society as Chairman of the Chemical Committee. They would always think of him as an able colleague, every one would regret his death as a great loss, and many would miss him as a true, loyal, and kind friend.

The minutes of the last meeting of the Council, held on Wednesday, January 25, 1911, were taken as read and approved.

One hundred and seven duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was received and adopted, together with the Accounts and Balance Sheet for 1910 and the Estimate of Ordinary Receipts and Expenditure for 1911, these documents being explained in detail by the Chairman of the Finance Committee.

On the motion of Sir JOHN THOROLD, seconded by Sir GILBERT GREENALL, the Earl of Northbrook was elected a Trustee of the Society in the room of the late Earl Cawdor.

On the motion of Sir JOHN THOROLD, seconded by Mr. ADEANE, Mr. Greaves was appointed a Vice-President of the Society.

A Report was also received and adopted from the Special Committee. A suggestion that the officers of the Society should be asked to deliver lectures to Members had been approved. It had been arranged that the first of these lectures should be given by their Botanist, Professor Biffen, at 4 p.m. on Tuesday, April 4 next.

The Tuberculosis Experiment Committee's Report was received and adopted. The Earl of NORTHBROOK, in presenting this Report, said that although everything was going on satisfactorily at Woburn, he regretted the progress of the demonstration had not been so rapid as was expected. They had experienced a greater difficulty than they anticipated in obtaining down-calving cows that reacted to the test. As the Council would see, out of the first lot of twenty cows, only one reacted in a satisfactory manner. Of the third lot of eleven, seven reacted. He thought that was probably accounted for by the fact that the first two lots were chiefly composed of young cows. The last lot were mainly old cows. They had now at Woburn eight cows which had reacted to the test. One cow had calved on Sunday. That calf had been carefully removed to the new buildings, and was being fed on sterilised milk. Every precaution was being taken against infection, and he hoped that in a short time they would have calves from the other seven cows. The Committee proposed to obtain seven more calves from reacting cows as soon as possible, and thus to bring the number of calves at Woburn to fifteen. The remaining cows would be obtained during the course of the summer.

Other business having been transacted, the Council adjourned until Wednesday, April 5, 1911.

WEDNESDAY, APRIL 5, 1911.

At a Monthly Council, held at 16 Bedford Square, W.C., the Right Hon. AILWYN E. FELLOWES (Acting-President) in the Chair:—

Present:—Trustees.—Mr. J. Bowen-Jones, Mr. F. S. W. Cornwallis, Lord Middleton, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Sir Richard P. Cooper, Bart., Mr. J. Marshall Dugdale, Mr. R. M. Greaves, Sir Gilbert Greenall, Bart., the Hon. Cecil T. Parker.

Other Members of the Council.—Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Major-General J. F. Brocklehurst, C.V.O., C.B., Mr. Davis Brown, Mr. R. G. Carden, Mr. Richardson Carr, Mr. R. A. Cooper, M.P., the Hon. John E. Cross, Mr. James Falconer, Mr. Howard Frank, Mr. E. A. Hamlyn, Mr. Joseph Harris, Mr. W. Harrison, Sir A. G. Hazlerigg, Bart., Mr. John Howard Howard, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Milwood, Mr. Henry Overman, Mr. R. G. Patterson, Mr. C. M. S. Pilkington, Mr. G. G. Ren, Mr. F. Reynard, Mr. C. C. Rogers, Mr. Fred Smith, Mr. H. H. Smith, Mr. George Taylor, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. E. V. V. Wheeler, Mr. C. W. Wilson, and Mr. L. G. Wrigley.

The following Members of the Norwich Local Committee were also present:—The Lord Mayor of Norwich, Lord Hastings, and Mr. E. W. Beck (Local Secretary).

The minutes of the last meeting of the Council, held on Wednesday, February 22, 1911, were taken as read and approved.

Lord Aldenham, Mr. R. M. Greaves, Captain A. R. Steele, and the Earl of Winchelsea were elected as Governors, and 128 duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was presented, and adopted with the omission of a paragraph respecting a scheme suggested by the Committee

for Superannuation and Invalidity Insurance of the Secretary and some of the members of the staff. Mr. ADEANE having explained the proposed scheme in detail, and answered a number of questions asked by Members of Council, it was, on the motion of Mr. R. A. COOPER, seconded by Mr. DENT BROCKLEHURST, decided to postpone the further consideration of the matter until the next meeting.

In presenting the Report of the Implement Committee, Mr. GREAVES said he thought the Council would agree that at Norwich they hardly expected to have a larger application for space than at Liverpool. As a matter of fact, however, the amount of shedding applied for was greater than it had been for some years.

Authority was given for the Seal of the Society to be affixed to the Agreement with Messrs. Edward Wood & Sons for the erection of the Showyard at Norwich.

Other business having been transacted, the Council adjourned until Wednesday, May 3, 1911.

WEDNESDAY, MAY 3, 1911.

At a Monthly Council, held at 16 Bedford Square, W.C., the Right Hon. AILWYN E. FELLOWES (Acting-President) in the Chair:—

Present:—Trustees.—H.R.H. Prince Christian, K.G., Mr. J. Bowen-Jones, the Earl of Coventry, the Duke of Devonshire, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, Mr. R. M. Greaves, Sir Gilbert Greenall, Bart.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Mr. H. Dent Brocklehurst, Major-General J. F. Brocklehurst, C.V.O., C.B., the Hon. John E. Cross, Mr. J. T. C. Eadie, Mr. Arthur E. Evans, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Mr. E. A. Hamlyn, Mr. Joseph Harris, Sir A. G. Hazlerigg, Bart., Major H. G. Henderson, M.P., Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. F. Ingram, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. Henry Overman, Mr. R. G. Parterson, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. W. A. Prout, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Viscount Ridley, Mr. C. G. Rogers, Mr. W. Scoby, Mr. Fred Smith, Mr. H. H. Smith, Mr. George Taylor, Mr. C. W. Tindall, Mr. E. V. V. Wheeler, and Mr. C. W. Wilson.

Governors.—Mr. W. F. Holt Beever and Mr. Harold Swithinbank

The minutes of the last meeting of the Council, held on Wednesday, April 5, 1911, were taken as read and approved.

Sir James H. Domville, Bart., Sir Samuel Scott, Bart., M.P., and the Right Hon. Sir Edgar Speyer, Bart., were elected as Governors, and forty-eight duly nominated candidates were admitted into the Society as Members.

The ACTING-PRESIDENT announced that Mr. Arthur E. Evans, of Bronwyllia, Wrexham, had been elected the representative for the Division of North Wales, in succession to Mr. Greaves. Mr. Evans was well known to many of them, and he was sure he would receive a very hearty welcome to their meetings.

The ACTING-PRESIDENT referred to the fact that a very old Member of the Council of the Royal Agricultural Society had on the previous day completed his eightieth year. He referred to Sir Walter Gilbey, a gentleman who had always taken a very deep interest in their Society, and he was sure they would all wish to send him their most hearty congratulations on that most happy event.

On the motion of Mr. ADEANE, seconded by the Duke of DEVONSHIRE, the following resolution was unanimously passed:—

"That the Finance Committee be requested to carry out the Insurance Scheme which has now been laid before the Council, and that they have power to set aside such sum of money not exceeding 9,000*l.*, the interest of which will be sufficient to pay the necessary premiums. This sum to be held in the names of the following Trustees:—The Duke of Devonshire, the Earl of Northbrook, the Right Hon. Ailwyn Fellowes, and Mr. Cornwallis."

Mr. BOWEN-JONES, in presenting the Report of the Chemical Committee, called the attention of the Council to the fact that their visit of inspection to the Woburn Farm had been fixed for July 27, which was the day after the Meeting of the Council succeeding the Show. The annual visit of Members had been fixed for the following day. Last year he was pleased to say that over seventy of their Members attended the meeting and evinced the greatest interest in the work at the Farm. There was no reason to suppose—but rather otherwise—that they would have a smaller number at this year's gathering. With reference to the approaching visit of Colonial Ministers, the Committee were of opinion that it would not be inappropriate that these distinguished gentlemen should be invited to inspect the scientific development of the Society's work at Woburn, as well as to attend the Show of Stock and Implements that was to be held at Norwich. Of course, the Committee recognised that this was a matter entirely for the consideration and decision of the Council, but he felt he was not wrong in saying that there would be much of interest and also of instruction in what these gentlemen would see if they went to Woburn. He could only say that if the visit took place the Members of the Committee would do everything in their power to make it successful in every way.

The ACTING-PRESIDENT said that, with regard to the latter part of Mr. Bowen-Jones' remarks, the question of a visit to Woburn by the Colonial Ministers of Agriculture was being considered in connection with the other arrangements that were being made for them.

The SECRETARY announced that the Trustees of the "Queen Victoria Gifts" Fund had decided to make a grant to the Royal Agricultural Benevolent Institution of 140*l.* for the year 1911, to be distributed as fourteen grants of 10*l.* each to the five male candidates, five married couples, and four female candidates who polled the largest number of votes in their class and who would not this year receive grants from any other fund in connection with the Royal Agricultural Benevolent Institution.

A letter was read from the Small Holdings and County Life section of the Festival of Empire, inviting the Society to appoint a representative as a member of a Committee formed for the purpose of convening a Congress, and was referred for consideration to the Committee of Selection.

Other business having been transacted, the Council adjourned until Wednesday, May 31.

WEDNESDAY, MAY 31, 1911.

At a Monthly Council, held at 16 Bedford Square, W.C., the Right Hon. AILWYN E. FELLOWES (Acting-President) in the Chair:—

Present:—Trustees.—Mr. J. Bowen-Jones, Mr. F. S. W. Cornwallis, Lord Moreton, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, Sir Gilbert Greenall, Bart., the Hon. C. T. Parker, the Earl of Yarborough.

Other Members of the Council.—Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. R. G. Carlen, the Hon. John E. Cross, Mr. H. Dudding, Mr. James Falconer, Mr. E. A. Hamlyn, Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Mr. Bayntun Hippisley, Mr. W. J. Hosken, Mr. J. Howard Howard,

Mr. W. F. Ingram, Mr. Alfred Mansell, Mr. W. A. May, Mr. C. Middleton, Mr. G. Norris Midwood, Mr. W. Nocton, Mr. Henry Overman, Mr. R. G. Patterson, Mr. W. A. Prout, Mr. F. Reynard, Mr. C. C. Rogers, Mr. E. W. Stanyforth, Mr. C. W. Wilson, and Mr. L. C. Wrigley.

The following Members of the Norwich Local Committee were also present:—Lord Hastings, with Mr. Arnold H. Miller and Mr. E. W. Beck (Local Honorary Secretaries).

The minutes of the last meeting of the Council, held on Wednesday, April 5, 1911, were taken as read and approved.

One hundred and eighteen duly nominated candidates were admitted into the Society as Members.

The SECRETARY read the following letter, which had been received by the Acting-President from Sir Walter Gilbey:—

MY DEAR FELLOWES,—I was very much touched by your kind letter. It was very nice indeed of my colleagues on the Council of the Royal Agricultural Society to think of me on the occasion of my eightieth birthday. Kindly convey them my warmest thanks.

Yours sincerely,

(Signed) WALTER GILBEY.

The Report of the Finance Committee was received and adopted; and on the motion of Mr. ADEANE, seconded by Sir GILBERT GREENALL, it was resolved: "That the Secretary be empowered to issue to any duly nominated candidate for membership of the Society, on receipt of the annual subscription, a badge admitting the candidate to the same privileges as a Member during the forthcoming Show at Norwich: the formal election of such candidate to be considered by the Council at their next ordinary meeting."

The Report of the Chemical and Woburn Committee having been read, a discussion thereon ensued. The Report was eventually received and adopted subject to an amendment referring a question to the Finance and Special Committees instead of to the Finance Committee alone, as recommended by the Chemical Committee.

A resolution was adopted, on the motion of Mr. BOWEN-JONES, seconded by Mr. CHRISTOPHER MIDDLETON, empowering the Chemical and Woburn Committee to seek an interview with the Board of Agriculture or the Development Commissioners in connection with the Society's application for a grant from the Development Fund in aid of the Woburn Experimental Station.

The Right Hon. AILWYN E. FELLOWES, in the unavoidable absence of the Duke of Devonshire (Chairman), reported that the Special Committee had had before them a suggestion that the Society's gold medal should be awarded for original research on any agricultural subject, or any of the cognate agricultural sciences. It had been resolved to refer the matter to the Expert Sub-Committee, with the request that they would consider the matter, and draw up a scheme for submission to the full Committee in July next.

On a motion from the Chair, it was resolved that the Seal of the Society be fixed to a power of attorney for the transfer of 11,000*l.* Consols into the names of the four Trustees in connection with the Superannuation Scheme.

Other business having been transacted, the Council adjourned until Tuesday, June 27, in the Norwich Showyard.

TUESDAY, JUNE 27, 1911.

At a Monthly Council, held in the Showyard at Norwich, the Right Hon. AILWYN E. FELLOWES (Acting-President) in the Chair:—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., Mr. F. S. W. Cornwallis, Lord Middleton, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. R. M. Greaves, Sir Gilbert Greenall, Bart., the Hon. Cecil T. Parker.

Other Members of the Council.—Mr. D. T. Alexander, Mr. T. L. Aveling, Mr. Davis Brown, Mr. T. A. Buttar, Mr. R. G. Carden, the Hon. J. E. Cross, Mr. Henry Dudding, Mr. Arthur E. Evans, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Mr. James W. Glover, Mr. E. A. Hamlyn, Mr. Joseph Harris, Mr. William Harrison, Sir Arthur G. Hazlerigg, Bart., Mr. J. H. Hine, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. Wm. A. May, Mr. Christopher Middleton, Mr. G. Norris Midwood, Mr. T. Horrocks Miller, Mr. Wm. Nocton, Mr. Henry Overman, Mr. Claude M. S. Pilkington, Mr. H. Fitzwalter Plumptre, Mr. W. A. Prout, Mr. G. G. Rea, Mr. Frederick Reynard, Mr. C. Coltman Rogers, Mr. John Rowell, Mr. Wm. Scoby, Mr. Fred Smith, Mr. George Taylor, Mr. C. W. Tindall, Mr. Arthur P. Turner, Mr. E. V. V. Wheeler, Mr. C. W. Wilson, and Mr. Louis C. Wrigley.

The minutes of the last meeting of the Council, held on May 31, 1911, were taken as read and approved.

The SECRETARY reported the receipt of letters from the Norfolk Club, Norwich, the Cromer Club, Cromer, and the Yare and Bure Sailing Club, inviting Members of Council to become honorary members of those three bodies during the period of the Show, and instructions were given for these letters to be acknowledged with thanks.

On the motion of the ACTING-PRESIDENT, seconded by Sir GILBERT GREENALL (Honorary Director), it was resolved:

"That the best thanks of the Society are due and are hereby tendered to—

- (a) The Officials of the General Post Office for the efficient postal and telegraphic arrangements.
- (b) The Chief Commissioner of Police for the efficient service rendered by the detachment of Metropolitan Police on duty in the Showyard.
- (c) The Chief Constables of the City of Norwich and the County of Norfolk for the efficient police arrangements in connection with the Show.
- (d) The Second East Anglian Field Ambulance Corps for the efficient Ambulance arrangements.
- (e) Messrs. Barclay & Co. for the efficient services rendered by their officials in connection with local banking arrangements.
- (f) Messrs. Shand, Mason & Co., for the provision of Fire Engines and for the efficient arrangements in connection with the Fire Station in the Showyard.
- (g) Messrs. Trevor, Page & Co., Norwich, for decorating and furnishing the Royal Pavilion.
- (h) Messrs. Daniels Bros., Limited, Norwich, for providing the Floral Decoration near the Pavilions, &c.
- (i) Messrs. Ransomes, Sims & Jefferies for the loan of a Steam Engine for supplying Motive Power to the Dairy."

Thanks were also tendered to all the exhibitors in the Agricultural Education and Forestry Exhibition, and to those gentlemen who were so kind as to lend motor cars and offer hospitality to the Judges of Plantations.

Letters of thanks were ordered to be addressed to various other individuals, firms, &c., who had rendered assistance in connection with the Show.

It was resolved, on the motion of the Hon. CECIL T. PARKER, seconded by Mr. PERCY CRUTCHLEY, that the Acting-President, Honorary Director, and one of the Stewards of Finance, be authorised to issue cheques on the Society's account in discharge of accounts arising out of the Show.

A question raised by the Hon. CECIL PARKER, as to the omission of certain exhibitors to provide leading sticks for bulls, was referred to the Stock Prizes Committee for consideration when drawing up the regulations for the Doncaster Show.

The ACTING-PRESIDENT said there was one matter he wished to bring forward which was not on the agenda paper. There was a gentleman in that county, Mr. Robert Fellowes, of Shotesham, a kinsman of his, who was ninety years of age. He was well known as an agriculturist and as a sportsman. He had been elected in the year 1850, and thus had been a Member for

sixty-one years, paying the annual subscription. He thought, if the Council would agree, that they should make him a Life Governor from that day.

Mr. Robert Fellowes was thereupon transferred to the list of Life Governors of the Society.

The Council then adjourned until Wednesday, July 26, 1911, at 11 a.m., at 16 Bedford Square, London, W.C.

Proceedings at General Meeting of Governors and Members,

**HELD IN THE
LARGE TENT IN THE SHOWYARD AT NORWICH,**

TUESDAY, JUNE 27, 1911.

THE RIGHT HON. AILWYN FELLOWES (ACTING-PRESIDENT) IN THE CHAIR.

There was a very large attendance in the tent, and amongst those on the platform were: The Earl of Northbrook, Lord Hastings, Lord Middleton, the Hon. Cecil T. Parker, Sir J. B. Bowen-Jones, Bart., Sir Richard Cooper, Bart., Sir Gilbert Greenall, Bart., Sir Arthur G. Hazlerigg, Bart., Sir John Thorold, Bart., Mr. C. R. W. Adeane, Mr. Davis Brown, Mr. T. A. Buttar, Mr. R. G. Carden, Mr. F. S. W. Cornwallis, Mr. Percy Crutchley, Mr. Henry Dudding, Mr. Arthur E. Evans, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Mr. Jas. W. Glover, Mr. R. M. Greaves, Mr. Joseph Harris, Mr. Wm. Harrison, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. J. Howard Howard, Mr. W. F. Ingram, Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. Christopher Middleton, Mr. G. Norris Midwood, Mr. Wm. Nocton, Mr. Henry Overman, Mr. Claude M. S. Pilkington, Mr. H. Fitzwalter Plumtre, Mr. George G. Rea, Mr. C. Coltman Rogers, Mr. John Rowell, Mr. Wm. Scoby, Mr. Fred Smith, Mr. C. W. Tindall, Mr. Arthur P. Turner, Mr. Louis C. Wrigley, Sir Thomas Elliott, the Lord Mayor of Norwich, Mr. G. M. Chamberlin, Mr. Russell J. Colman, &c.

Acting-President's Opening Remarks.

The ACTING-PRESIDENT, in opening the proceedings, said he felt it a very great honour to preside over that meeting of Governors and Members at what was the seventy-second "country meeting" of the Royal Agricultural Society, and the Show at which His Gracious Majesty had consented to be their President. (Applause.) While mentioning His Majesty's name he thought he had better at once read a telegram which had been sent from Buckingham Palace that morning, the terms of which were:—

"To Ailwyn Fellowes,

"Royal Agricultural Show, Norwich.

"I am delighted to hear that the Royal Agricultural Show has been opened under such favourable auspices, and that the hope expressed in my letter to you of January 23 that we shall be able to record an eminently successful Show has been realised. Please convey to the Governors and Members at the General Meeting my sincere appreciation of all they have done to bring about this result. I much look forward to visiting the Show to-morrow, and to thanking you personally for the very efficient manner you have discharged the duties of President of the Society on my behalf.

"(Signed) GEORGE, R.I."

That telegram, the CHAIRMAN said, showed once again the deep interest His Majesty took in that great Society, and he was sure they were all grateful to him for what he had done. (Applause.) It was well known to them all that His Majesty's country home was in that county. At Sandringham he learnt his farming, and they might congratulate His Majesty on the great

success of his animals in the show-ring, and express the hope that it was only the beginning of many successes in the future. (Applause.) The King had shown lately a still greater interest in their Society by conferring upon one of its oldest and most respected Members of Council a high honour. (Hear, hear.) He was quite sure he was expressing the feelings of all in that tent and of agriculturists all over the country when he heartily congratulated Sir Bowen Bowen-Jones, Bart., on the honour which had been conferred upon him.

When, last December, the Members did him the honour of electing him their Acting-President, he promised them a lovely Showground, and he thought that that promise had been fulfilled. (Applause.) Through the kindness and generosity of his good friend Mr. Russell Colman, they were—to his mind—assembled on one of the finest Showyards that the Society had ever had since Windsor in the year 1889, and the thanks of all of them were due to Mr. Colman.

When the Show was held at Norwich twenty-five years ago the Royal Agricultural Society wanted 62 acres; to-day the Show, through the growth of their great Society, now occupied 125 acres. Since 1886 the horticultural, forestry, agricultural education, and horse-shoeing sections had been established.

As regards the Horticultural Exhibition, he thought they would find, when the tents were opened that afternoon, one of the finest horticultural displays which had ever been seen in this country. Then, as regards forestry, he was glad to know that the landowners of Norfolk, Suffolk, and Cambridgeshire had supported it right royally. One other matter, and one which he was sure would be of interest to his good friend Sir Thomas Elliott, and through him to the President of the Board of Agriculture, was that they had established prizes for plans of houses and buildings for small holdings, which were really increasing to a great extent in their county of Norfolk.

Then, as regards the membership of that Society. They now stood at 10,500 odd, but if he might be allowed to say so, in his humble judgment that was a very poor figure for the whole of England and Wales. He hoped to see the day when the membership of that Society, which was doing such grand work for the agriculturists of the kingdom, would be largely increased. They in Norfolk had led the way. They had, he was glad to know, through the kindness of many in the county, been able to raise their number of Members from 324 on January 1 this year to 746—(applause)—and what one county had done other counties could do with a little work. He reminded them of a well-known passage which their President used when he came back from his Colonial tour. Talking of the Colonies, he said, "Wake up, England!" Might they not say to-day, "Wake up, Agricultural England; join the premier Society, and help on the good work that it has done for so many years, and can do in the future." (Hear, hear.)

As regards the financial position of the Society, he thought it was satisfactory, but, at the same time, it required careful watching. He always noticed that when a certain sum was put to reserve there were certain people who liked to spend money; but, thank goodness, they had an excellent and a very stubborn "Chancellor of the Exchequer" in Mr. Adeane, and he was certain that neither he nor Sir Gilbert Greenall would ever stand waste or extravagance in the management of the Society. (Applause.)

He believed the Society now stood in as fine and prosperous a condition as it had ever done. And to what was this due? It was due in a great measure to the Members themselves, who were taking more interest in agricultural questions. It was also due to that loyal body of Stewards, who worked early and late for the benefit of the Show; and it was due, above all, to the hard work and good organisation and the good tact and courtesy of Sir Gilbert Greenall, their Honorary Director—(applause)—and it was due also a great deal to their excellent staff—Mr. McKow and his staff at Bedford Square.

Some people were a little upset that there had not been a better attendance at the Show on the previous day, but he thought it was to be explained by the

fact that there had been a large increase of Members in the county, who, of course, came into the Showyard free, and also that there were a great many season ticket holders.

Farm Prize Awards.

At the request of the Chairman, the SECRETARY read the awards in the Farm Prize Competition (see page cxxiv).

Plantations and Home Nurseries.

Mr. McROW also read out the awards of the judges of plantations and home nurseries in Norfolk, Suffolk, and Cambridgeshire (see pp. cxxv. and cxxvi.).

Plans of Small Holdings Buildings.

In the competition for plans of house and buildings suitable for a mixed farm not exceeding 50 acres in extent, the awards of the judges were announced as on page cxxiv.

Thanks to Lord Mayor and Corporation.

Sir GILBERT GREENALL, moving a resolution of thanks to the Lord Mayor and Corporation of Norwich, said that was a business meeting, and therefore he hoped that, in simply and briefly proposing the resolution placed in his hands, it would not be thought that the Society was not fully alive to the great work and hospitality of the Lord Mayor, supported by the Corporation, of Norwich. Ever since the Show officials had been working there they had received every kindness from the Lord Mayor. He had done everything in his power to make the Show a success, and had been backed up throughout by the Corporation of the City. (Hear, hear.) Therefore, he begged to move: "That the best thanks of the Society are due, and are hereby tendered, to the Lord Mayor and Corporation of Norwich for their cordial reception of the Society."

Mr. C. R. W. ADEANE, in seconding the motion, said their Chairman that day had paid him the compliment of being stubborn in the interests of the Society, but, however stubborn he might be, he could assure those present that he needed no driving to second this resolution, which was no formal matter, because they all realised that, however perfect their Show might be in itself, it could not be a success unless it received the good will and hearty co-operation of the locality to which it made its visit. The Society had always been extremely fortunate in the welcome it received, but never could the warmth and kindness of the reception be greater than had been the case in the present instance. This was almost entirely due to the Lord Mayor and Corporation of Norwich, and the Society gave them their most hearty thanks.

The resolution having been adopted,

The LORD MAYOR OF NORWICH, on behalf of the city, acknowledged the cordial expressions of thanks for the little they had been able to do to make the meeting this year a success. He need hardly remind those present that the city and county lived almost entirely, directly or indirectly, through agriculture. It had been a great pleasure to welcome the Society that week. If the efforts of the citizens met with the Society's satisfaction, they were very amply repaid. (Applause.)

Thanks to Local Committee.

The Earl of NORTHBROOK had pleasure in moving that the Society's thanks be tendered to the Norwich Local Committee for their exertions to promote the success of the Show. He thought it would be obvious to all of them that the success of those Shows must depend to a great extent upon the local support they received. They were fortunate this year in having been associated with an able and business-like Committee, and also in having the co-operation and assistance of a number of influential gentlemen resident in the city and county. They desired to express to the Local Committee their appreciation of the good work that they had done, and the help they had given in promoting the success

of the Show. He desired particularly to express their thanks to the Chairman of the Local Committee, the Lord Mayor of Norwich, the local honorary secretaries, Mr. E. W. Beck and the Town Clerk (Mr. Arnold Miller), and last, but not least, to Mr. G. M. Chamberlin, who had taken the keenest interest in all the preparations and had given most valuable assistance.

The Hon. CECIL PARKER said that, having once been chairman of a local committee, and having been brought much in contact with these bodies in previous years, he knew what a great deal depended upon the work they did. He had much pleasure in seconding the resolution, which was then put to the meeting and unanimously agreed to.

Mr. G. M. CHAMBERLIN desired to return grateful thanks to Lord Northbrook and Mr. Parker for the terms in which they had proposed this resolution. He was sure Lord Northbrook would forgive him for reminding him of a little mistake he had made. The Chairman of the Local Committee was not the Lord Mayor, but Mr. Ailwyn Fellowes. He made that remark because he considered that Norwich had done remarkably well in providing nearly 6,000*l.* towards the funds raised in connection with the Show, but Mr. Fellowes must forgive him for saying that the money had been very easily got mainly on account of his personality and popularity.

Thanks to Railway Companies.

Mr. F. S. W. CORNWALLIS said it was his pleasant duty and privilege, as Senior Steward of Implements, to propose that the best thanks be given to the railway companies. Addressing Mr. Fellowes, he said that when that gentleman and other railway directors read the announcement not long ago that their great soldier and organiser, Lord Kitchener, had become a director of the South-Eastern and Chatham Railway Company, he thought they all realised that they would have to look to their laurels. He did not know whether that fact had spurred on the Great Eastern Railway, or whether it was their determination to do their best for the Royal Agricultural Society, that had enabled them, in the midst of unprecedented difficulties and great stress of traffic consequent on the Coronation festivities, to deliver the implements and live stock with a punctuality that he did not remember ever to have been exceeded. They must remember one other thing, and one that spoke volumes for the railway company. Throughout all their arduous work, from the humblest driver of a waggon to the highest officials, he had not seen a single person in the slightest degree out of temper. It showed the spirit in which the railway people had approached their difficult task. He understood it was greatly owing to Mr. Fellowes' efforts as Deputy Chairman of the Company, as well as those of Mr. F. G. Randall, the Superintendent of the Line, and Mr. W. C. May, the Goods Manager, that this satisfactory state of affairs had been brought about.

Mr. JOSEPH HARRIS (Steward of Stock) formally seconded the motion, which was unanimously passed.

Mr. FELLOWES, on behalf of the railway company, returned thanks. From the Board of Directors down to the humblest porter on the line, their aim and object had been to do everything they could for the success of the Show, and he could not speak too highly of the work, not only of the officials in London, but also of the local officials at Norwich.

Members' Remarks.

At this stage the Chairman inquired whether any Governor or Member had any remarks to make or suggestions to offer for the consideration of the Council. No Member, however, rose to take advantage of the invitation.

Thanks to Chairman.

Sir THOMAS ELLIOTT proposed a vote of thanks to the Acting-President for his services in the Chair. Every one would testify to Mr. Fellowes' unselfish services in the interests of agriculture. He was a man not only of head

but also of heart, and he was not only respected, but was regarded with feelings of what might be called affection and even of love. He was a man who, whatever his hand findeth to do, does it with all his might. He had shown these qualities in his various capacities, as President of the Local Committee, Acting-President of the Society, and Deputy Chairman of the G.E. Railway Company. In fact, he seemed to be a kind of Pooh-Bah in connection with the Show (Laughter and applause.)

Mr JOSEPH MARTIN said he felt complimented that he had been asked to second the resolution. For thirty years he had been a Member of Council, but old age must have its place. He was very pleased to be there and to meet old faces. Allusion had been made to the Great Eastern Railway Company. He could remember the time when the shares of the Company stood at 18*l.* apiece, and all the carriages were ticketed, "This is the property of So-and-so." (Laughter.) When the railway was opened to Ely the guards rode on top of the carriages. He also recalled the placing of luggage on the tops of carriages under tarpaulin covers. While on the Council he had sat under several Presidents, but he did not hesitate to say that Mr. Ailwyn Fellowes was equal to any, inferior to none, and superior to many.

The vote of thanks was carried by acclamation, and on Mr Fellowes rising to reply, he was greeted with cheers.

When it was decided, said Mr. FELLOWES, that the Show should visit the county in which he was born and in which he had lived all his life, he had determined, as Acting-President for the year, to do everything he could to help to make the Show a success, and he trusted that on Friday it would be found that it had been a great success. All through the last six months he had received nothing but kindness and assistance from everybody connected with the county and city. There had not been a thing which the Local Committee had asked of a landowner, farmer, or anybody else that had been declined. (Applause.) Norfolk and Norwich had been determined to do everything they could to make the Show a big success. He was deeply grateful to all of them, and more than grateful to Mr. Beck and the Town Clerk for their assistance. It was not often now that one got a great body of agriculturists before one, and he wanted to tell his Norfolk friends that it was being stated that many local Members had just joined the Society for this year only in view of the Show. He appealed to them to stick to the "Royal." Let them not support it for one year and then drop out. It was the cheapest investment of a sovereign they had ever made in their lives. Let them stick on themselves and also endeavour to get more new Members. He wanted his Norfolk friends who had put the Society in the position it now occupied to help to keep it there. (Applause.)

Vote of Thanks to Mr. Colman.

He concluded by moving: "That the best thanks of the Society are due, and are hereby tendered, to Mr. Russell Colman for his kindness in lending such a beautiful site for the Society's Show of 1911." No words of his were necessary to ask their acceptance of that resolution, because he was sure they were all of one mind with regard to it.

Sir GILBERT GREENALL, in seconding the motion, said that never since he had been connected with the Show had it been held on such a beautiful site. Neither had he seen a showground that stood the rain like that one. Since the Show preparations commenced they had been cutting down Mr. Colman's trees and doing other things of the kind, but Mr. Colman had always met them smilingly and never objected to anything. When they were on the land of people like that it made matters very easy. He desired to thank Mr. Colman very much for his kindness to him personally.

The motion was enthusiastically carried.

Mr. RUSSELL COLMAN, who was greeted with applause on rising, expressed his very great pleasure at meeting the Members of the Royal Agricultural

Society at Crown Point. His most prominent thought and anxiety had been that they should have the ground which suited their requirements. He was glad to see them there in such numbers, and he hoped that the figures at the end of the week would be such as to make the Show a very good one for the Royal Agricultural Society.

Cheers having been given for Mrs. Fellowes who was present in the tent, the meeting then terminated.

WEDNESDAY, JULY 26, 1911.

At a Monthly Council, held at 16 Bedford Square, W.C., the Right Hon. Sir AILWYN FELLOWES, K.C.V.O. (Acting-President), in the Chair :—

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., the Earl of Coventry, the Duke of Devonshire, Lord Moreton, the Earl of Northbrook.

Vice-Presidents.—Mr. C. R. W. Adeane, Sir Richard Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, Mr. R. M. Greaves, Sir Gilbert Greenall, Bart., the Hon. C. T. Parker.

Other Members of the Council.—Mr. T. L. Aveling, Major-General J. F. Brocklehurst, C.V.O., C.B., Mr. Howard Frank, Mr. E. A. Hamlyn, Lord Harlech, Mr. Joseph Harris, Mr. W. Harrison, Sir A. G. Hazlerigg, Bart., Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. Ernest Mathews, Mr. W. A. May, Mr. W. Nocton, Mr. Henry Overman, Mr. F. Reynard, Mr. C. C. Rogers, Mr. Fred Smith, Mr. E. W. Stanyforth, Mr. George Taylor, Mr. C. W. Tindall, Mr. E. V. V. Wheeler.

Governor.—Mr. Harold Swithinbank.

The minutes of the last meeting of the Council, held on Tuesday, June 27, in the Norwich Showyard, were taken as read and approved.

Ninety-six duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was received and adopted, and Mr. ADEANE made a statement with regard to the Scheme of Insurance of the Secretarial Staff.

On the motion of Mr. ADEANE, seconded by Sir GILBERT GREENALL, it was resolved : "That, in order to facilitate the winding up of the accounts for the Norwich Show as early as possible, authority be given for the issue, during the recess, of orders on the Society's Bankers for the payment of accounts connected with the Show."

Authority was given for the sealing of documents in connection with the scheme for the Insurance of the Secretarial Staff.

Other business having been transacted, the Council adjourned over the autumn recess until Wednesday, October 25, 1911.

WEDNESDAY, OCTOBER 25, 1911.

At a Monthly Council, held at 16 Bedford Square, W.C., the Right Hon. Sir AILWYN FELLOWES, K.C.V.O. (Acting-President), in the Chair :—

Present:—Trustees.—H.R.H. Prince Christian, K.G., Sir J. B. Bowen-Jones, Bart., the Duke of Devonshire, Lord Moreton, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, Sir Gilbert Greenall, Bart., the Hon. C. T. Parker.

Other Members of the Council.—Mr. T. L. Aveling, Mr. Henry Dent Brocklehurst, Mr. Davis Brown, Mr. T. A. Buttar, the Hon. John E. Cross, Mr. John T. C. Eadie, Mr. Arthur E. Evans, Mr. Howard Frank, Mr. James W. Glover, Mr. E. A. Hamlyn, Mr. Joseph Harris, Mr. W. Harrison, Mr. J. H. Hine, Mr. R. W. Hobbs, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. G. Norris Midwood,

Mr. W. Nocton, Mr. Henry Overman, Mr. C. M. S. Pilkington, Mr. W. A. Prout, Mr. G. G. Rea, Mr. F. Reynard, Mr. C. C. Rogers, Mr. John Rowell, Mr. Fred Smith, Mr. E. W. Stanforth, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. E. V. V. Wheeler, and Mr. Louis C. Wrigley.

The minutes of the last meeting of the Council, held on Wednesday, July 26, 1911, were taken as read and confirmed.

The ACTING-PRESIDENT, before the commencement of the ordinary business, said it was with great regret that he had to announce the death of the Earl of Onslow, a former colleague, who had held many important posts in the Empire, and who, after many months of suffering, had passed away. They would perhaps remember him best as a Member of Council in the days when the Society was not in such a good position, and they would also remember him as a former Minister for Agriculture, from 1903 to 1905, during which time he did good and serviceable work for the agricultural industry. He, personally, had had the privilege of serving under Lord Onslow for three years at the Board of Agriculture, and he could truthfully say that no man had a kinder chief or a better friend.

Twenty-nine duly nominated candidates were admitted into the Society as Members under By-law 2, and the name of one Member was reinstated under By-law 14.

In presenting the Report of the Finance Committee, Sir JOHN THOROLD moved: "That the best thanks of the Society be given to Professor Ainsworth-Davis for his very successful re-editing of Dr. Fream's text-book, and to those gentlemen who have so ably assisted him."

This resolution was seconded by Mr. ADEANE, and carried unanimously.

The Report of the Special Committee was received and adopted, including a recommendation that Dr. Voelcker's salary be at the rate of 700*l.* as from January 1, 1912. The Report also contained the Regulations in connection with the offer of the Society's Gold Medal for Agricultural Research. (These will be found on page 337.)

The Chemical and Woburn Committee's Reports were received and adopted, subject to the alteration of a date necessitated by the Report of the Special Committee adopted by the Council. The SECRETARY read a resumé of the correspondence which had passed between the Society and the Board of Agriculture in connection with the Council's application for a Grant from the Development Fund for the Woburn Experimental Farm.

On the motion of Mr. E. W. STANFORTH, seconded by Mr. H. DENT BROCKLEHURST, it was unanimously resolved: "That this Council respectfully press the Board of Agriculture to bring into operation the Tuberculosis Order of May 27, 1909, the compensation to be provided either out of the Development Fund or from other Imperial sources, and not from local rates."

The Reports of the Stock Prizes and Judges Selection Committees were received and adopted. Mr. REYNARD, in presenting these Reports, stated that the amount voted for prizes by the Finance Committee for the Doncaster Show of next year was 6,000*l.*, or 500*l.* above the amount offered last year, and the largest amount yet offered. (When the peripatetic show was resumed at Derby in 1906, the prizes offered by the Society amounted to 4,000*l.*) There would be classes for nine breeds of horses, nineteen breeds of cattle, twenty-five breeds of sheep, and six breeds of pigs. The Society continued to receive the generous support of the Breed Societies, and in that connection he would like to remove an idea that seemed to be growing in certain quarters that these contributions were not voluntarily offered by the Breed Societies. That was not the case, for the Society provided a classification for each breed in accordance with its importance, and the number of exhibitors and entries, and the Breed Societies' contributions went to supplement that classification. Several private individuals who contributed most generously to the prize-list preferred to remain anonymous, but nevertheless the Society's best thanks were due to them. With regard to the entry fees, as to which there had been some agitation,

the cost of providing shedding, fodder, and bedding was considerably in excess of the entry fees received, and under these circumstances he thought they would agree that it was impossible to reduce the fees.

Sir GILBERT GREENALL undertook to make inquiries with regard to the possibility of arranging a Trial of Sheep Dogs at the Doncaster Show, as to which a suggestion was made by Mr. PILKINGTON.

The Report of the Implement Committee was received and adopted; and, on the motion of the Hon. J. E. CROSS, seconded by Mr. CRUTCHLEY, it was unanimously resolved: "That the cordial thanks of the Society be conveyed to Messrs. William Dennis & Sons, Ltd., for their kindness in providing, free of cost to the Society, the necessary facilities for carrying out the Trials of Potato Diggers and Potato Sorters on their land at Littleworth."

The Report of the Council to the Annual General Meeting of Governors and Members, to be held at the Royal Agricultural Hall, Islington, at 3 p.m., on Wednesday, December 6, was prepared and ordered to be issued.

Other business having been transacted, the Council adjourned until Wednesday, December 6.

WEDNESDAY, DECEMBER 6, 1911.

At a Monthly Council, held at 16 Bedford Square, W.C., the Right Hon. Sir ALLWYN E. FELLOWES, K.C.V.O. (Acting-President), in the Chair:

Present:—Trustees.—Sir J. B. Bowen-Jones, Bart., Mr. F. S. W. Cornwallis, the Earl of Coventry, Lord Middleton, Lord Moreton, the Earl of Northbrook, Sir John H. Thorold, Bart.

Vice-Presidents.—Mr. C. B. W. Adeane, Sir Richard P. Cooper, Bart., Mr. Percy Crutchley, Mr. J. Marshall Dugdale, Mr. R. M. Greaves, Sir Gilbert Greenall, Bart.

Other Members of the Council.—Mr. D. T. Alexander, Mr. E. W. Betts, Mr. Henry Dent Brocklehurst, Mr. Davis Brown, Mr. T. A. Buttar, Mr. Henry Dudding, Mr. John T. C. Eadie, Mr. Arthur E. Evans, Mr. James Falconer, Mr. Howard Frank, Mr. W. T. Garne, Mr. E. A. Hamlyn, Lord Hastings, Sir Arthur Hazlerigg, Bart., Mr. J. H. Hine, Mr. Baynton Hippisley, Mr. Arthur Hiscock, Mr. R. W. Hobbs, Mr. W. J. Hosken, Mr. W. F. Ingram, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. W. A. May, Mr. G. Norris Midwood, Mr. T. H. Miller, Mr. John Myatt, Mr. W. Nocton, Mr. Henry Overman, Mr. R. G. Patterson, Mr. C. M. S. Pilkington, Mr. H. F. Plumptre, Mr. F. Reynard, the Duke of Richmond and Gordon, K.G., Mr. John Rowell, Mr. Fred Smith, Mr. H. H. Smith, Mr. George Taylor, Mr. C. W. Tindall, Mr. A. P. Turner, Mr. E. V. V. Wheeler, Mr. C. W. Wilson, and Mr. Louis C. Wrigley.

The following Members of the Doncaster Local Committee attended the meeting of the General Doncaster Committee:—The Mayor of Doncaster, Mr. John Law, Alderman G. Smith, Mr. E. A. H. Tovey, Mr. G. B. C. Yarborough, and Mr. F. H. Chafer (Local Secretary).

The minutes of the last meeting of the Council, held on Wednesday, October 25, 1911, were taken as read and confirmed.

Mr. John Shillito, representing the Co-operative Wholesale Society, Manchester, and Mr. Falconer L. Wallace, of Edgcote, Banbury, were elected as Governors, and 52 duly nominated candidates were admitted into the Society as Members.

The Report of the Finance Committee was received and adopted, together with the accounts in connection with the Norwich Show, concerning which an explanatory statement was made to the Council by Mr. ADEANE.

Sir JOHN THOROLD, in presenting the Report of the Journal and Education Committee, said it was with great regret that the Committee learned of

Mr. Mackenzie's resignation of the position of Editor for reasons of health. Of course it would be understood that Mr. Mackenzie would bring out the next volume of the Journal.

Mr. H. HERBERT SMITH called attention to the fact that no mention was made of abortion in cattle in the Annual Report of the Principal of the Royal Veterinary College, as he thought this might cause some disappointment to agriculturists in the West of England. The question of abortion was a very serious one indeed in many districts, and several representations had been made to him on the subject. The Annual Report was a most excellent one in every other respect, but, as he had said, it did not contain anything with regard to this disease, the losses from which were so considerable that few of them, he thought, knew how very great such losses were. He merely wished to draw the attention of the Council to what, to his mind, was an important omission, because he felt it would cause considerable disappointment if an Annual Report of this character were published without making any reference to the matter. Lord NORTHBROOK, in reply, said he was sure they all agreed with Mr. Herbert Smith that the question of abortion was of the greatest importance to the stock-breeders of this country. He might point out, however, that the question had been dealt with fully in previous reports presented by Sir John McFadyean, and he thought he was correct in saying that it was dealt with in the last Report Sir John presented. No doubt Mr. Smith was aware of the very interesting Report of the Departmental Committee on Abortion in Cattle, and farmers who studied that report could not fail to learn a great deal from it. He was one of those who regretted that no action had been taken on that Report. He did not know whether they could altogether blame the Board of Agriculture, because some societies had taken what, in his humble judgment, was an unfortunate view, and had assumed an attitude of hostility to the Departmental Committee's recommendation for compulsory notification. He was afraid that the action of those societies had not tended to support the Board in dealing with the matter. He would like the Council to know that this question had not been lost sight of at the Royal Veterinary College, but that further experiments were being carried out by Sir John McFadyean which would be of very great importance, and when those experiments had reached a more advanced stage a Report would be presented. Mr. SMITH thought it would be a good thing if agriculturists could know that. All he criticised was that no mention was made of a disease which was causing such devastation in the West of England.

On the presentation of the Report of the Committee of Selection, the ACTING-PRESIDENT welcomed the new Members of Council (Lord Hastings, Mr. E. W. Betts, and Mr. John Myatt) who were present at the meeting. He was sure the Council were all glad to see them there, and their advice would also be valued at the meetings.

The Earl of NORTHBROOK, in presenting the Report of the Tuberculosis Experiments Committee, said he was glad to be able to say that everything was progressing satisfactorily with regard to the demonstration. He would like to say one word on a matter referred to in the Report. Accounts had been recommended for payment at the last meeting, and he might supplement that by saying that the total expenditure up to date was 382*l.* 10*s.* 2*d.* The cost to the Society would have been very much greater than that but for the generosity of Lord Rothschild, who very kindly undertook to provide thirty down-calving cows that had reacted to the tuberculin test, and to bear all cost of putting the calves on the farm. The Committee, on the advice of Sir John McFadyean, considered that it was desirable that they should have thirty calves for the demonstration, as originally contemplated. It was inevitable that they must lose a certain number of calves born on the farm, particularly when they took into consideration that for the purposes of the demonstration the calves had to be reared from the first days of their life under somewhat trying conditions, and therefore they would not get from the thirty cows which

Lord Rothschild so kindly offered to supply the thirty calves that it required for the demonstration. However, they were fortunate in finding another generous friend in Sir Richard Cooper, who had kindly undertaken to provide the additional calves that would be necessary to bring up the number to thirty. He need hardly say that the Committee had most gratefully accepted that offer, and he felt that it would be the wish of the Council to join in expressing their hearty thanks to Sir Richard for the valuable assistance he had promised.

The following Standing Committees were appointed for 1912:—Finance, Journal and Education, Chemical and Woburn, Botanical and Zoological, Veterinary, Stock Prizes, Implement, Showyard Works, Selection, Dairy and Produce, and Special.

The present Members of the various Standing Committees were (with so few exceptions) reappointed to those Committees. Lord Hastings was added to the Journal and Education, Chemical and Woburn, and Dairy and Produce Committees; Mr. E. W. Betts to the Botanical and Zoological Committee; Captain O'live Behrens to the Veterinary and Stock Prizes Committees; Mr. Richardson Carr to the Veterinary Committee; Mr. John Myatt to the Stock Prizes and Implement Committees; Sir Ailwyn Fellowes, Sir Richard Cooper and Mr. Cornwalls to the Committee of Selection.

Other business having been transacted, the Council adjourned on Wednesday, January 31, 1912.

Proceedings at the Annual General Meeting of Governors and Members

HELD AT THE ROYAL AGRICULTURAL HALL, ISLINGTON,

WEDNESDAY, DECEMBER 6, 1911.

THE RIGHT HON. SIR AILWYN E. FELLOWES, K.C.V.O. (ACTING-PRESIDENT)
IN THE CHAIR.

Present:—Trustees.—Sir J. Bowen Bowen-Jones, Bart., Lord Middleton, John H. Thorold, Bart.

Vice-Presidents.—Mr. C. R. W. Adeane, Mr. Percy Crutchley, Sir Gilbert Greenall, Bart., C.V.O.

Other Members of the Council.—Mr. T. L. Aveling, Mr. E. W. Betts, Mr. H. Dent Brocklehurst, Mr. Davis Brown, Mr. T. A. Buttar, Mr. Henry Duddell, Mr. John T. C. Eadie, Mr. James Falconer, Mr. Ernest A. Hamlyn, Mr. William Harrison, Lord Hastings, Sir Arthur G. Hazlerigg, Bart., Mr. J. Hine, Mr. Arthur Hiscock, Mr. Robert W. Hobbs, Mr. J. Howard Howarth, Mr. Walter F. Ingram, Sir Charles V. Knightley, Bart., Mr. J. L. Luddington, Mr. Alfred Mansell, Mr. Ernest Mathews, Mr. William A. May, Mr. G. Nor Midwood, Mr. William Nocton, Mr. Henry Overman, Mr. Claude M. Pilkington, Mr. Frederick Reynard, His Grace the Duke of Richmond and Gordon, K.G., Mr. John Rowell, Mr. Fred Smith, Mr. C. W. Tindall, Mr. E. V. V. Wheeler, and Mr. Christopher W. Wilson.

Governors.—Sir John Swinburne, Bart., Mr. C. L. Prior.

Members.—Sir Francis A. Channing, Bart., M.P., Sir Thomas Elliott, K.C. Messrs. Alfred Amos, W. E. G. Atkinson, W. Bainbridge, W. Worby Beaumont, N. Benjafield, Ernest D. Brieant, Arthur Britten, F. J. Casserley, W. Cleverley, Cary Coles, Major P. G. Craigie, C.B., Messrs. Henry Davies, A. Dean, J. B. Ellis, H. M. G. Evans, John Evens, Cecil Fane, A. Fawcett, William Fendick, J. Stranger Ford, William Fortune, J. S. Gibbons, Her Walter Gilbey, F. L. Gooch, William Higgott, H. G. Hiron, J. T. Hobbs, T. Huband, Daniel Jenkins, Dunbar Kelly, James Kennedy, W. Langridge, J. A.

Lay. F. D. Little, Llewellyn T. E. Llewellyn, Miss Eurgain Lort, Messrs. C. J. B. Macdonald, Arthur C. Moore, Charles Morris, J. M. Moubray, Harry B. Neame, A. W. Neate, T. G. Owen, Herbert Padwick, J. S. Parkin, W. Parlour, J. Egerton Quested, R. Henry Rew, St. John B. Roscoe, the Rev. H. M. Rowden, Messrs. A. Rumball, J. W. Sanders, S. Simpson, S. Sinha, Dr. B. Skelweit, Messrs. Frank Smith, A. J. Stanton, John Stimpson, Thomas Stirton, Richard Stratton, J. Herbert Taylor, George D. Thody, Rees Thomas, C. D. Thompson, E. Trimen, William Tudge, J. W. Watt, Frank Webb, &c.

Chairman's Opening Remarks.

The Right Hon. Sir AILWYN FELLOWES said it was very gratifying to him to be allowed to preside on that occasion over such a large body of Members of the Royal Agricultural Society, more especially as in taking the chair that day he was acting as the deputy of His Majesty the King, who so greatly honoured the Society by graciously accepting the Presidency for the past year. He did not think it was necessary for him to say how deeply grateful they were and had been for very very many years for the deep interest the Royal House took in the work of the Society, and to show still further the interest His Majesty the King had taken in his year of office, he had received the following letter from him, signed by his own hand, which was written before he left for India, and which he commanded should be addressed to the Members of the Society that day :—

Buckingham Palace,
November 11, 1911.

MY DEAR FELLOWES,—

On the occasion of the annual meeting of the Royal Agricultural Society, I desire to assure the Council and Members what a satisfaction it was to me to be President of the Society during the year of my Coronation, and that I was able to be present at the splendid Show at Norwich.

I know how much of its success was due to you, who so kindly undertook to perform for me the Presidential duties of the year, and also how greatly we are indebted to Sir Gilbert Greenall and to our Secretary, Mr. T. McRoe.

I take this opportunity of expressing my true gratitude for the valuable services rendered by you and by them to the Society.

I earnestly trust that the Society may continue to flourish, and I shall ever watch over its interests with personal solicitude.

Believe me,

Very sincerely yours,
(Signed) GEORGE R.I.

The Rt. Honble.

Sir Ailwyn Fellowes, K.C.V.O.

He need hardly say that they were deeply grateful to their President, His Majesty the King, for the gracious message he had written to them.

Accounts.

The business of the meeting began, as they would see, with the presentation of the Balance-sheet. The accounts connected with the Show at Norwich had been printed, and were in the hands of the Members. Though the financial result of the Show to the Society was not as satisfactory as some of those held in recent years, he thought that those who were present at Norwich would agree that the Show itself was in every other respect a brilliant success, and from the point of view of exhibits of all kinds had seldom, if ever, been surpassed, and one thing he could say was that the Society had never had a finer Showground than was given to them by Mr. Russell Colman at Crown Point. He would like to take that opportunity, once again, on behalf of the Council and the Members of the "Royal," to express their gratitude to the Lord Mayor and Town Clerk of Norwich and to all those who took such a deep interest in the Show, not only in the city, but in the county. As he ventured to say once before, there was never a request that the Local Committee had put forward that was not well received by all connected with Norfolk and Norwich, and although it was not such a financial success as they hoped it might have been, still at the same time the Society had done good work in going to a purely agricultural county, and he hoped it would not be many years before they went again.

Report.

As they would see from the Report, the Society had, during the time that had elapsed since they last met in that room, lost by death a large number of its Members, many of whom had been well-known figures in the agricultural world. But there was one sad death since the Report was printed, and that was the death of Mr. Henry Webb, of Streetly, who was such a noted breeder of Southdown sheep, and was a son of Mr. Jonas Webb, of Babraham, who was known everywhere as a breeder of Shorthorn cattle as well as Southdown sheep.

The Show next year was to be held, as they knew, at Doncaster, and everything pointed to a most successful Show. He had the opportunity, at Sir Gilbert Greenall's dinner to the Breed Societies the other evening, of sitting next to the Mayor of Doncaster, and he and his Local Committee were determined to do everything they could to make the Show a great success. The Yorkshire Agricultural Society, from the Council of whom, some two years ago, emanated the proposal that the "Royal" should visit Yorkshire in 1912, were giving up their own annual show for the year, and the two Societies were working together, the County Society members being granted the same privileges for the Show as Members of the Royal Agricultural Society. The list of prizes for the Show, which would, he hoped, be ready for issue next month, would be on very generous lines. The Council had voted the sum of 6,000*l.*, the biggest amount voted from its own funds, and 2,000*l.* more than the grant for prizes at the Derby Show in 1906. While on the subject of the prize-list, he would like to take the opportunity once again of thanking most heartily, on behalf of the "Royal," the Breed Societies for the great help they had given the Society in the past year and in years gone by.

For the generous prizes offered by the Doncaster Local Committee for farms in Yorkshire no less than forty-nine entries had been received, and the Judges would shortly be making their first visit of inspection.

Membership.

There was one other thing he would like to mention—it was generally mentioned at every annual meeting of the Society—and possibly, as he came from Norfolk, he might be allowed more strongly to put it before those present. That was the question of membership. He did not want to boast about his own county, but he did say that Norfolk had done well during the past year. They had secured something like 400 new Members, and from a letter which had been sent round to all the Members in the county, signed by himself and the four elected Norfolk Members of the Council, he sincerely hoped and trusted that the very large majority of those Members would become permanent supporters of the Society. What a poor agricultural county like Norfolk could do a good many other counties could do, and he honestly thought that the membership of a great—the premier—agricultural society of England was not sufficient with 10,000 Members. If each one Member would himself get one Member by next year, they would have 20,000 Members, which was not a bit too big for a Society like theirs.

Adoption of Report.

The Report had been printed and circulated through the post to each Member, and the meeting would probably be willing that it should be taken as read. There was one other point which, although not in the Report, he would just like to take the opportunity to mention, especially as his friend Sir Thomas Elliott was present that afternoon. Sir Thomas had informed him that in connection with outbreaks of foot-and-mouth disease which had taken place in Somersetshire the last remaining restrictions had been removed that day, and it might therefore be confidently asserted that the country was now free from this disease.

Sir THOMAS ELLIOTT said that he had been asked, and he did so very heartily, to move the adoption of the Report and Accounts presented to the general meeting. He would not like to do so without expressing to the Council,

to the Acting-President, to the permanent officers of the Society, to every one, their thanks and congratulations on the way in which they had maintained the prestige of the Royal Agricultural Society during the past year. The Acting-President had said that the Report might be taken as read, and he supposed that was almost a necessity at such a meeting, but he hoped he might assure him on behalf of every one that it would be read, and with the appreciation with which he himself had read it. With regard to the increase of Members, he cordially supported what had fallen from him in that direction. They had got to 10,000, but he hoped they would not stop there, and would go on to 15,000. They must move by stages in the matter, and with a little exertion they would easily increase their numbers. He congratulated the Council on the way in which they had seen to the educational and scientific work of the Society, which was equally important. They wanted to provide means of bringing together a collection of fine stock and fine implements, and of the various agricultural requisites, but they could only advance the science by means of the educational and scientific activities such as the Society was engaged in carrying on. There was no occasion for a long speech, but, speaking from his heart, the Reports and Accounts were extraordinarily creditable to the Council and Officers of the Society. He was especially glad that in a year when they had been honoured by the Presidency of His Majesty King George V. they should have so good an account to give of themselves. He had great pleasure in moving the adoption of the Report.

Mr. LLEWELLYN T. E. LLEWELLYN had great pleasure in seconding, and the Report and Accounts were unanimously adopted.

Election of President.

The CHAIRMAN said that, in accordance with the By-laws, the Council recommended that Lord Middleton should be elected as President for the ensuing year. Lord Middleton had been their President once before, and had consented, if the meeting agreed, to become President at Doncaster next year.

Mr. HENRY WALTER GILBEY, as an Ordinary Member of the Society, took it as the highest compliment that could be paid to him to be allowed to propose "That Lord Middleton be elected President of the Society, to hold office until the next ensuing Annual General Meeting." He considered that it would be not only impertinent but superfluous to attempt to tell the agriculturists in that room all the qualifications Lord Middleton had to hold that important office. His Lordship, as the Acting-President had stated, had already been President of the Society on one previous occasion, and it was at a time when the Royal Society was not in the flourishing condition they now knew it to be in. He was sure there was not an agriculturist in the room who would not heartily approve of the resolution that he had been requested to put before them, that his Lordship should be asked to take that office. Lord Middleton, as they were all aware, was one of the most important landlords in the kingdom, and a nobleman respected by every one who knew him. (Hear, hear.) His keenness in agriculture generally was well known, and in his attendance at the meetings of the horse societies or in connection with agriculture he was more frequent, or as frequent, as any member of those societies. He was sure it was a debt that all agriculturists owed to his Lordship for the past services he had rendered to them, and they would ask him with pleasure to accept the office of President for the ensuing year at Doncaster.

Major P. G. CRAIGIE, C.B., as an old Member of the Society, had very much pleasure in seconding the motion that had been put before them. He did not think there would be in that room, nor among their 10,000 Members, a dissentient voice to the choice of the Council, which was one which they most heartily ratified and approved. Lord Middleton was known to every one of them as a breeder of the greatest eminence of various varieties of stock. He would be a typical President, and in a typical county like Yorkshire they could

anticipate a record meeting next year. He thanked the Council for suggesting Lord Middleton's name, and they looked forward to a year of great brilliance following the Royal President this year.

The motion having been put from the Chair and unanimously agreed to, Lord MIDDLETON rose and thanked the meeting for having asked him to be President of the Royal Agricultural Society for the ensuing year. He accepted with thanks and with pleasure. Especially he felt it an honour as this was the second time he had been asked to fill the office. He must say that he perhaps accepted the office with rather more confidence than he had done a few years ago. There was one thing he would like to allude to, and that was as to what Sir Ailwyn Fellowes had said as regards the membership. Sir Ailwyn had given them a wonderful lead, and had secured something like 400 new Members. All those who represented Yorkshire would, his Lordship was sure, do everything in their power to do as well as Sir Ailwyn had done, and he hoped they might do better. He thanked the meeting most heartily for the way in which his name had been proposed and for the way in which it had been received. There was a great augury for success for next year, as the entries for the farm prizes had been so satisfactory.

Election of Trustees.

The ACTING-PRESIDENT stated that the following twelve Trustees had been nominated by the Council in accordance with the By-laws, and on a show of hands they were duly elected :—

H.R.H. Prince Christian, K.G., Cumberland Lodge, Windsor.
Bedford, Duke of, K.G., Woburn Abbey, Bedfordshire.
Bowen-Jones, Sir J. B., Bart., St. Mary's Court, Shrewsbury.
Cornwallis, F. S. W., Linton Park, Maidstone, Kent.
Coventry, Earl of, Croome Court, Severn Stoke, Worcestershire.
Devonshire, Duke of, Chatsworth, Chesterfield.
Gilbey, Sir Walter, Bart., Elsenham Hall, Elsenham, Essex.
Jersey, Earl of, G.O.B., G.O.M.G., Middleton Park, Bicester.
Middleton, Lord, Birdsall House, Malton, Yorks.
Moreton, Lord, Sarsden House, Chipping Norton, Oxon.
Northbrook, Earl of, Stratton, Micheldever, Hampshire.
Thorold, Sir John H., Bart., Old Hall, Syston, Grantham.

Election of Vice-Presidents.

The Vice-Presidents were elected in a similar manner, the names being as follows :—

Adeane, C. B. W., Babraham Hall, Cambridge.
Cooper, Sir Richard P., Bart., Shenstone Court, Lichfield.
Crutchley, Percy, Sunninghill Lodge, Ascot, Berkshire.
Derby, Earl of, G.O.V.O., C.B., Knowsley, Prescott, Lancashire.
Dugdale, J. Marshall, Llwyn, Llanfyllin S.O., Mont.
Fellowes, Right Hon. Sir Ailwyn E., K.C.V.O., Honingham Norwich.
Faversham, Earl of, Duncombe Park, Helmsley, Yorkshire.
Greaves, R. M., Wern, Portinadoc, North Wales.
Greenall, Sir Gilbert, Bart., O.V.O., Walton Hall, Warrington.
Northumberland, Duke of, K.G., Alnwick, Northumberland.
Parker, Hon. Cecil T., The Grove, Corsham, Wiltshire.
Yarborough, Earl of, Brocklesby Park, Lincolnshire.

Elections to the Council.

The ACTING-PRESIDENT then announced, in accordance with By-law 87, the names of the following Ordinary Members of Council who had been elected to represent the several Divisions of the Society included in Group "A," in order that the meeting might "take cognisance of their election" :—

Behrens, Capt. Clive, Swinton Grange, Malton, Yorks (N.R.).
Betts, E. W., Babingley, King's Lynn, Norfolk.
Brown, Davis, Marham Hall, Downham Market, Norfolk.
Buttar, Thomas A., Corston, Coupar Angus, Scotland.
Carr, Richard-on, Estate Office, Tring Park, Hertfordshire.
Cross, Hon. John E., High Leigh, Knutsford, Cheshire.
Eadie, John T. O., The Rock, Newton Solney, Burton-on-Trent, Derbyshire.
Falconer, James, Northbrook Farm, Micheldever Station, Hampshire.
Harrison, William, Hall House, Leigh, Lancashire.

Hastings, Lord, Melton Constable Park, Norfolk.
Hiscock, Arthur, Manor Farm, Motcombe, Shaftesbury, Dorset.
Hosken, W. J., Pulsack, Hayle, Cornwall.
Howard, John Howard, Clapham Park, near Bedford, Bedfordshire.
Knightley, Sir Charles V., Bart., Fawley, Daventry, Northants.
Midwood, G. Norris, The Grange, North Role, Congleton, Cheshire.
Miller, T. Horrocks, Singleton Park, Poulton-le-Fylde, Lancashire.
Myatt, John, Lynn House, Lichfield, Staffordshire.
Overman, Henry, Weasenham, Swaffham, Norfolk.
Patterson, R. G., Acton Hill, Stafford, Staffordshire.
Rea, George Grey, Middleton, Wooler, Northumberland.
Bidley, Viscount, Blagdon, Cramlington, Northumberland.
Taylor, George, Cranford, Middlesex.
Wheeler, E. Vincent V., Newnham Court, Tenbury, Worcestershire.
Wrigley, Louis C, Trelleck Grange, Chepstow, Monmouthshire.

Election of Auditors.

Mr. J. HERBERT TAYLOR had very great pleasure in moving that the Society's best thanks be tendered to Mr. Jona. M. Webb, Mr. Hubert J. Greenwood, and Mr. Newell P. Squarey, the three Auditors, for their services during the past year. Their work must be considered a somewhat dry one, but it was nevertheless highly important. He begged to move that a vote of thanks be given to these gentlemen, and that they be re-elected for the coming year.

The motion was seconded by Mr. F. L. GOOCH, and carried unanimously.

Members' Suggestions.

The ACTING-PRESIDENT then asked if any one present had any remarks to make or suggestions to offer for the Council's consideration.

Sir JOHN SWINBURNE thought that very often too much attention was paid to gaining a large sum of money over and above expenses at these Shows. He considered the Royal Agricultural Society should be rather above that. They held their great meetings, not for pecuniary advantage, but for the sake of encouraging agriculture in every way, and not only in the United Kingdom was the Royal Agricultural Society looked to, but all over the civilised world. They might sometimes get a slight deficiency, as at Norwich, but when they weighed this with the enormous amount of good carried out by those Shows, he did not think they ought to take that deficit too much into account.

Mr. J. EGBERTON QUESTED had hoped to have seen, or to have heard, that they were to have some slight reduction in the entry-fees for sheep. He thought that some of the Bred Societies had petitioned the Council with the view of obtaining a reduction in the entrance fees. They looked back into the days when the fee was 5s., when the Council was going down hill it was 10s., and it had now reached the maximum of 1l. They had not grumbled when the Society was not in a flourishing condition. He drew attention to the remarks of the last speaker, and said that the Council were now in a good financial position, and had a wonderful Reserve Fund. He thought the time had come when the Council should seriously consider the interests of exhibitors, and reduce the entry-fees for sheep. In the Report for the Doncaster Show the fee was already fixed for 1l., and he simply threw out the suggestion that when they considered the prize-sheet for 1913 they would see their way to give assistance by reducing the entry-fees. The desire had been expressed that there should be an increase in the number of Members of the "Royal," and he thought it would be some incentive if they reduced the fees, and they would probably increase the membership accordingly. He only hoped the Council would see their way to consider the suggestion.

The CHAIRMAN assured Sir John Swinburne and Mr. Quested that their suggestions should be considered by the Council. As regards Sir John Swinburne's remarks about the finances, he might say that the Show at Norwich cost 30,000l., and with a reserve of only 50,000l., there was not a very great margin. He did not think the Members ever wanted the "Royal" to get back into the position of a few years ago. (Hear, hear.)

Regarding the entry-fees for sheep, he could only say that the matter had been most carefully considered over and over again by the Stock Prizes Committee, but he would take care that it was mentioned to them again, in view of Mr. Quested's remarks

Thanks to His Majesty, Retiring President.

The Duke of RICHMOND AND GORDON said there was a stereotyped form which brought to a close most meetings which concluded the business of a company for the year, and, although it was in that sense that he had been asked to address the meeting, he felt that on an occasion like the present they did not want any stereotyped forms, and could say that the motion he was going to put would come generously from them from the bottom of their hearts. He had been asked to propose a vote of thanks to His Majesty the King for having been President during the past year. They must all recognise thoroughly what generous support had been given to the agriculturists of this country by the Royal Family of England, not only by his present Majesty, but by his late Majesty King Edward and by Queen Victoria. Although what he was about to say dealt more particularly with a fat stock show than with the general work of the "Royal," he would like to mention that recently they had had a National Fat Stock Show in Edinburgh. It had not been going for very many years, fifteen years, he thought, but for some reason or another, he did not know why, they had never received any direct Royal patronage. He had been asked to bring the matter before his present Majesty, which he had done, and without any demur His Majesty at once presented a valuable prize to the Scottish National Fat Stock Show. Now he thought that showed clearly that His Majesty really took a decided interest in what, without straining words, might be called the premier industry of the country. This was the third time His Majesty had been President of the "Royal." The first occasion was in 1897 when Duke of York, the second in 1903 as Prince of Wales, and during the past year as King of the country. He thought it added to the pleasure and to the glory—if he might use that word—of their last year's Presidency that His Majesty should have been President during the year of his Coronation. He thought it marked to some extent an era in their Society. They all knew that, pressed as he was last summer with all the multitudinous duties that pertained to the year of his Coronation, he still found time to go down to Norwich and exhibit the personal interest which he took in the Show held in his native county. He thought they might rest assured that His Majesty would continue to them that gracious favour of patronage which he had always so liberally bestowed on them. He did not think he need detain them any longer in asking them to pass with acclamation the following resolution:—

"The Royal Agricultural Society of England in general meeting assembled desires to express its feeling of loyal attachment, and to convey to His Majesty its grateful sense of the honour to the Society and benefit to the agriculture of the country conferred by His Majesty's gracious acceptance of the Presidency of the Society during the past year. At the end of His Majesty's year of office the Society desires once more to repeat the assurance that there is no class of his subjects more devotedly attached to His Majesty than the agriculturists of England."

In putting that motion to the meeting, his Grace thought it would probably come home to all that at the present moment, when His Majesty was visiting his far-off dominions, a journey which is undertaken in the belief that he is doing what a sovereign of these dominions should undertake however far off he may have gone, there was no one in this country who looked forward to his safe return more than they did, and who would say with more heartfelt feeling, "God save the King." (Cheers.)

Mr. JAMES KENNEDY (Doonholm, Ayr), in seconding the resolution, wished to associate himself with all that his Grace had said in proposing it. He thought it was due to His Majesty that Members of the Society should accord him their heartiest thanks for being President that year, and it was due to him from agriculturists, whether in Scotland or in England. In Scotland they appreciated very highly the fact that not only he, but his predecessor, had

taken such a very enthusiastic interest in agriculture. Since his Grace had mentioned the generous gift which His Majesty had made to the Scottish National Fat Stock Show, he should like to mention that he had the honour of winning that cup for the first time.

The motion was then carried by acclamation, all the Members standing.

Thanks to Acting-President.

Mr. JOHN EVENS (Burton, Lincoln) said he had the honour and the pleasure to propose to the meeting the following resolution—a vote of thanks to Sir Ailwyn Fellowes for his services as Acting-President. He knew not why he had been asked to propose that, except, perhaps, the fact that he was a tenant-farmer and during the rush and advance of the present day, when estates were being sold on all sides, and belonged, though he hoped not, to a body of people fast becoming extinct. If he might say so, he thought that His Majesty the King had been fortunate, and that the Society had been more than fortunate, in securing as Acting-President for the past year Sir Ailwyn Fellowes. And why? Because by his genial courtesy he had won the esteem of all the Members of the Society, but better than that the farmers in that room did not forget, the farmers of England did not forget, and he trusted never would forget, the services that had been paid to agriculture by their Acting-President. They remembered with pleasure the deep interest he had always taken in the affairs of the Society, and they acknowledged with thanks the practical business ability he had brought to the affairs of the Society. It was with the greatest pleasure that he moved the vote of thanks to Sir Ailwyn Fellowes.

Mr. ALFRED AMOS (Wye) said he was privileged to second the vote of thanks, and it was with great pleasure that he did so. He did not know why he had been selected to do this, but perhaps it was in order that he might have an opportunity of mentioning a matter in which he was interested. He wanted the Royal Agricultural Society to arrange so that all agricultural colleges could send students to compete for the National Diploma in Agriculture. He had been at a governors' meeting of the South-Eastern Agricultural College the other day, and when he asked why they had not sent any students up for this in the past, he was told that the date was so inconvenient. He did hope that the matter would be taken seriously into consideration, and that the Society would endeavour to give all the colleges an opportunity to compete for that diploma. Agricultural education, he believed, was capable of doing an enormous amount of good, and those colleges must depend upon the men they turned out rather than the pounds, shillings, and pence that they had left at the end of the year. The methods of agricultural colleges would be methods that agriculturists themselves insisted upon their being.

Returning to the motion which he had the pleasure of seconding, he must say that it augured well when one Minister of Agriculture invited a past Minister of Agriculture to accept the Presidency of a departmental committee such as that which had been appointed to inquire into the question of foot-and-mouth disease.

The SECRETARY then put the motion, which was carried with great enthusiasm.

Sir AILWYN FELLOWES, in response, said he was deeply grateful to his friend Mr. Evens and to Mr. Amos for the kind words that they had used in proposing and seconding the vote of thanks to himself as Acting-President of that Society. Before saying a word about that, he would like to refer to the question which Mr. Amos had raised, as to which he made the following explanation. The National Agricultural Examination Board in April, 1909, received a deputation from the Agricultural Education Association with regard to the examination for the National Diploma in Agriculture. In a statement then put forward it was said that the Association had been in communication with the various agricultural training centres in England concerning the date of the examination, and the result was that the numbers *for* and *against* a change of

date were absolutely equal. The Association were therefore unable to make any recommendation. The present date was, he believed, suitable to the Scottish colleges. The only way to meet the difficulty would probably be to have two examinations a year. This, however, would double the expense, and was a very serious matter for the two Societies represented on the National Agricultural Examination Board, some of the members of which were of opinion that the Societies were spending enough already in that direction. He could assure Mr. Amos, taking as he did the deepest interest in the college which he represented, that the matter would be considered.

As regards the vote of thanks, he could only say that this year had been one of the most interesting years in his public life. It had been hard work, but he had thoroughly enjoyed it, because it had been the means of his making many many friends, whom he hoped he would always keep through his life. He could not sit down without saying how deeply grateful he was for the great assistance that he had all through received, not only from his own county of Norfolk, but also from Sir Gilbert Greenall, and from their Secretary, Mr. McRow, and all his staff at Bedford Square.

The meeting then terminated. ●

NORWICH SHOW,

JUNE 26 TO 30, 1911.

Officials of the Show.

PRESIDENT:

HIS MAJESTY THE KING.

Acting President.

The Right Hon. Sir AILWYN E. FELLOWES, K.C.V.O.

Honorary Director.

Sir GILBERT GREENALL, Bart., C.V.O., Walton Hall, Warrington.

Stewards of Live Stock.

Horses.

CYRIL E. GREENALL, The Manor, Carlton Scroop, Grantham.

JOHN ROWELL, Bury, Huntingdon.

Cattle.

JOSEPH HARRIS, Brackenbrough Tower, Carlisle.

Sheep and Pigs.

C. W. TINDALL, Wainfleet, S O, Lincolnshire.

Steward of Dairying and Poultry.

ERNEST MATHEWS, Little Shardeloes, Amersham, Bucks.

Steward of Forage.

HENRY GILES, 27 Prince of Wales Road, Norwich.

Steward of Veterinary Examination.

CYRIL E. GREENALL, The Manor, Carlton Scroop, Grantham.

Stewards of Implements.

F. S. W. CORNWALLIS, Linton Park, Maidstone.

The Hon. J. E. CROSS, High Legh, Knutsford.

Stewards of Refreshments.

HOWARD FRANK, 37 Cheyne Walk, Chelsea, S.W.

WILLIAM HARRISON, Hall House, Leigh, Lancs.

Steward of Education Exhibition.

Sir J. B. BOWEN-JONES, Bart., St. Mary's Court, Shrewsbury.

Stewards of Horticultural Exhibition.

The Hon. JOHN R. DE C. BOSCAWEN, Tregye, Perranwell, Cornwall.

A. A. PATON, Oneida, Sefton Park, Liverpool.

Stewards of Forestry.

GEORGE MARSHALL, Broadwater, Godalming.

C. COLTMAN ROGERS, Stanage Park, Brompton Brian.

Stewards of Finance.

CHARLES R. W. ADEANE, Babraham Hall, Cambridge.

THOMAS L. AVELING, Boley Hill House, Rochester.

RICHARDSON CARR, Estate Office, Tring Park, Herts.

Sir RICHARD COOPER, Bart., Shenstone Court, Lichfield.

Surveyor.

J. R. NAYLOR, F.R.I.B.A., Smith's Bank Chambers, Derby,

Secretary.

THOMAS McROW, 16 Bedford Square, London, W.C.

JUDGES OF IMPLEMENTS.

Trials of Potato Diggers and Potato Sorters.

JOSEPH BETTINSON, Needham Lodge, Elm, Wisbech.

W. C. BROWN, Appleby, Doncaster.

HARRY HOPE, M.P., Barneyhill, Dunbar.

Miscellaneous Implements entered for Silver Medals.

J. B. ELLIS, Stanley House, St. Ives, Hunts.

R. M. GREAVES, Wern, Portmadoc.

JUDGES OF LIVE STOCK, &c.

HORSES.

Shires.—Classes 1-9.

W. THOMPSON, Junr., Knighton House, Leicester.
EDMOND WHINNERAH, Warton, Carnforth.

Clydesdales.—Classes 10-17.

GEORGE FINDLATER, Jerviswood Mains, Lanark.
JOHN MCCAIG, Belmont, Stranraer.

Suffolks.—Classes 18-26.

HARRY CROSS, Ixworth, Bury St. Edmunds.
HERBERT TURNER, Corn Hall, Bures, Suffolk.

Draught Geldings.—Class 27.

HARRY CROSS, Ixworth, Bury St. Edmunds.
JOHN MCCAIG, Belmont, Stranraer.
EDMOND WHINNERAH, Warton, Carnforth.

Hunters.—Classes 28-44.

W. A. HARFORD, Petty France, Badminton, Glos.
T. WICKHAM - BOYNTON, Burton Agnes, Driffield.

Polo Ponies.—Classes 45-49 ; Park Hack and Riding Ponies.—Classes 50-53.

The Earl of ORKNEY, The Tythe House, Stewkley, Leighton Buzzard.
Sir H. F. DE TRAFFORD, Bart., Hill Crest, Market Harborough.

Cleveland Bays and Coach Horses.—Classes 54 and 55.

ANDREW MOSCROP, Thorganby Hall, York.

Hackneys.—Classes 56-64 ; Hackney Ponies.—Classes 65-68 ; and Harness Horses.—Classes 69-80.

A. W. HICKLING, Adbolton, Nottingham.
TOM MITCHELL, Upwood, Bingley, Yorks.

Shetland Ponies.—Classes 81 and 82.

GEORGE FINDLATER, Jerviswood Mains, Lanark.

Welsh Ponies.—Classes 83-85

TOM JONES EVANS, Llwyneddion Stud Farm, Kenllan, R S O, Cardiganshire.

CATTLE.

Shorthorns.—Classes 86-98.

C. H. JOLLIFFE, Newbus Grange, Darlington.
R. STRATTON, The Duffryn, Newport, Mon.
JOHN C. TOPPIN, Musgrave Hall, Skelton, Penrith.

Dairy Shorthorns.—Classes 99-102.

B. READ, Church Farm, Cam, Dursley, Glos.
J. W. SANDERS, Gilmorton, Lutterworth.

Lincolnshire Red Shorthorns.—Classes 104-110.

S. CRAWLEY, Hemington, Oundle.

Herefords.—Classes 112-119.

A. E. HILL, Eggleton Court, Ledbury.
J. H. YEOMANS, Withington, Hereford.

Devons.—Classes 120-126.

WILLIAM BRENT, Clampton, Callington, Cornwall.

South Devons.—Classes 128-132.

E. B. LUSCOMBE, Court Farm, Woodleigh, Loddiswell, Devon.

Longhorns.—Classes 134-137.

Hon. E. A. FITZROY, Fox Hill, West Haddon, Rugby.

Sussex.—Classes 139-143.

T. BANNISTER, Limehurst, Haywards Heath.

Welsh.—Classes 144-147.

JOHN SCOURFIELD, Blaenweunddu, Whitland.

Red Polls.—Classes 148-154.

R. BEAUMONT BOND, The Red House, Sproughton, Ipswich.
A. D. BRUCE, Estate Office, Elvetham Park, Winchester.

Aberdeen-Angus.—*Classes 156-161.*

Dr. C. STEPHENSON, Sandyford Villa,
Newcastle-on-Tyne.
ARCHIBALD WHYTE, Inverquharity,
Kirkmuir.

Galloways.—*Classes 162-165; Highland.*
—*Classes 166 and 167.*

W. McCONCHIE, Mains of Penning-
hame, Newton Stewart.

Ayrshires.—*Classes 168 and 169.*

A. W. MONTGOMERIE, Lessnessock,
Ochiltree.

British Holsteins.—*Classes 171-173.*

HENRY P. RATCLIFF, Pebsham,
Bexhill, Sussex.

Jerseys.—*Classes 175-182.*

PHILIP J. AHIER, Seymour Farm,
Gorey, Jersey.
W. ASHCROFT, 13 The Waldrons,
Croydon.

Guernseys.—*Classes 184-188.*

G. TITUS BABHAM, Sudbury Park,
Wenbley, Middlesex.

Kerries.—*Classes 190-193; and*
Dexters.—*Classes 195-198.*

ROBERT BRUCE, Leinster House,
Dublin.
G. F. ROUMIEU, Bethune House,
Farnham, Surrey.

Dairy Cattle.—*Classes 200 and 201.*

B. READ, Church Farm, Cam, Dursley,
Glos.
J. W. SANDERS, Gilmorton, Lutter-
worth.

SHEEP.

Oxford Downs.—*Classes 204-208.*

JOHN BRYAN, Southleigh, Witney,
Oxon.
JOHN WHITE, Ham Court, Bampton,
Oxon.

Shropshires.—*Classes 209-214.*

W. BARBS, Tempe, Measham, Ather-
stone.
ARTHUR S. GIBSON, Coldham House,
Elm, Wisbech.

Southdowns.—*Class 215-220.*

ALLAN COOPER, Norton, Bishopstone,
Lewes.
HERBERT PADWICK, The Manor
House, West Thorney, Emsworth.

Hampshire Downs.—*Classes 221-226.*

E. J. BENNETT, Chilmark, Salisbury.
HENRY LAMBERT, Babraham, Cam-
bridge.

Suffolks.—*Classes 227-233.*

J. W. EAGLE, The Hall, Walton-on-
Naze.
PERCY EAGLE, Risby, Bury St.
Edmunds.

Dorset Downs.—*Classes 234-237.*

H. R. JESTY, Roke Farm, Bere Regis,
Wareham.

Dorset Horn.—*Classes 238-241.*

SAMUEL KIDNER, Bickley, Milverton,
Somerset.

Eylands.—*Classes 242-244.*

W. G. JONES, Lower House, Llyswen,
Breconshire.

Kerry Hill (Wales).—*Classes 245 and*
246.

A. E. HILL, Eggleton Court, Ledbury.

Lincolns.—*Classes 247-253.*

ROBERT FISHER, Leconfield, Beverley.
J. B. NELSON, Bigby, Grimsby.

Leicesters.—*Classes 254-257.*

H. T. ALLISON, Stanghow, Boosbeck.

Border Leicesters.—*Classes 258-260.*

J. R. C. SMITH, Mowhaugh, Kelso.

Wensleydales.—*Classes 262-265.*

J. W. GREENSIT, Holme-on-Swale,
Thirsk.
WILLIAM RHODES, Lundholme, West-
house, Kirkby Lonsdale.

Lonks.—*Classes 265 and 266.*

GEORGE BAROFT, Bank Lane,
Shuttleworth, Ramsbottom.

Derbyshire Gritstones.—
Classes 267-269.

JOHN T. GEE, The Ashes, Hayfield,
Derbyshire.

Kent or Romney Marsh.—
Classes 270-275.

ALFRED AMOS, Spring Grove, Wye.
C. J. G. HULKES, Somerhill Estate
Office, Tonbridge.

Cotswolds.—Classes 276-279.

DAVIS BROWN, Marham Hall, Downham Market.

Devon Long Wools.—Classes 280-282.

WILLIAM BRENT, Clampit, Callington, Cornwall.

South Devons.—Classes 283-287.

E. B. LUSCOMBE, Court Farm, Woodleigh, Loddiswell, Devon.

Dartmoors.—Classes 288-290.

J. BALL, Bowerland, Okhampton.

Exmoors.—Classes 291-293.

T. W. SMITH, Ford, East Downe, Barnstaple.

Cheviots.—Classes 294-296 ; and

Black-faced Mountain.—

Classes 301-303.

J. MURRAY, Park Hall, Douglas, N.B.

Herdwicks.—Classes 297 and 298.

GEORGE BARCROFT, Bank Lane, Shuttleworth, Ramsbottom.

Welsh Mountain.—Classes 299 and 300.

OWEN PRICE, Nantyrharn, Brecon.

PIGS.

Large Whites.—Classes 304-309.

JOHN PARR, Nottingham Road, Borrowash, Derby.

Middle Whites.—Classes 310-315.

W. F. A. WALKER-JONES, The Manor House, Burton, Westmorland.

Tamworths.—Classes 316-321.

T. S. MINTON, Montford, Shrewsbury.

Berkshires.—Classes 322-327.

T. A. EDNEY HAYTER, The Mount, Whitchurch, Hants.

Large Blacks.—Classes 328-333.

S. R. SHERWOOD, Playford, Ipswich.

Lincolnshire Curly-coated.—

Classes 334-339.

THOMAS P. HORN, Elm Grange, East Heckington, Boston.

POULTRY.

Classes 340-471.

R. ANTHONY, Home Farm, Euxton, Chorley, Lancs.

W. W. BROOMHEAD, Broadview, Hivings Hill, Chesham.

J. F. ENTWISLE, The Firs, Calder Grove, Wakefield.

Rev. C. H. HILDEBRAND, Loxwood Vicarage, Billingshurst.

EDWARD KENDRICK, Weeford House, Lichfield.

PRODUCE.

Butter.—Classes 472-478.

J. F. BLACKSHAW, The Cottage, Bromsgrove.

Cheese.—Classes 479-486.

Professor R. J. DRUMMOND, Dairy School, Kilmarnock.

JOHN PAKEMAN, The Manor, Chellaston, Derby.

Cider and Perry.—Classes 487-494.

W. J. GRANT, County Council Offices, Newport, Mon.

CHARLES ROOTES, Hereford.

Wool.—Classes 495-505.

F. C. COLLINS, Vincent Street, Tunbridge Road, Bradford.

T. H. MOORE, Dundas Street, Huddersfield.

Bread.

JOHN KIRKLAND, Borough Polytechnic, London, S.E.

Hives and Honey.—Classes 506-533.

C. L. M. EALES, Dilkusha, Wallington.

A. G. PUGH, Queen's Road, Beeston.

W. F. REID, Field Side, Addlestone.

Rev. A. D. DOWNES SHAW, Kettlestone Rectory, Fakenham.

COMPETITIONS.

Jumping.

M. G. LLOYD BAKER, The Cottage, Hardwicke, Gloucester.

C. EDWARD E. COOKE, Bygrave House, Baldock.

F. L. GOOCH, F.R.C.V.S., St. Martin's, Stamford.

Horse-shoeing.

HARRY V. LOW, M.R.C.V.S., St. Giles Street, Norwich.
W. JONES ANSTEY, A.F.C.L., Northenden, Jackson Avenue, Roundhay, Leeds.

Butter-making.

JOHN BENSON, Kettering Dairy, Dalkeith Place, Kettering.

Plans of House and Buildings for Small Holdings.

W. MOURACKEN, Englesea House, Crewe.
FREDERICK REYNARD, Sunderlandwick, Driffield.
ARTHUR VERNON, High Wycombe.

FARMS.

Classes 1 and 2.

A. H. CLARK, Moulton Eaugate, Spalding.
D. ABBOTT GREEN, Fingringhoe Hall, Colchester.

Classes 3-5.

BERNARD CASSWELL, Pointon, Folkingham.
W. W. WEST, Needham Hall, Wisbech.

PLANTATIONS AND NURSERIES.

Professor FRASER STORY, University College of North Wales, Bangor.
ANDREW SLATER, Woodsfield, Malvern.

FORESTRY.

J. F. ANNAND, Armstrong College, Newcastle-on-Tyne.
CHARLES MILES, Stamford.

HORTICULTURE.

N. F. BARNES, Eaton Gardens, Chester.
EDWIN BECKETT, The Gardens, Aldenham House, Elstree.
A. MACKELLAR, Royal Gardens, Windsor.
THOMAS STEVENSON, Woburn Place Gardens, Addlestone.

CHIEF VETERINARY OFFICER.

JOHN MALCOLM, F.R.C.V.S., Holliday Street Wharf, Birmingham.

VETERINARY INSPECTORS.

HARRY V. LOW, M.R.C.V.S., St. Giles Street, Norwich.
Professor J. MACQUEEN, F.R.C.V.S., Royal Veterinary College, Camden Town, London, N.W.
WILLIAM BOWER, M.R.C.V.S., East Rudham, King's Lynn.
F. L. GOOCH, F.R.C.V.S., St. Martin's, Stamford.
T. G. HEATLEY, M.R.C.V.S., Woodbridge.
HORACE L. ROBERTS, F.R.C.V.S., 100 Princes Street, Ipswich.
W. SHIPLEY, F.R.C.V.S., Southtown, Great Yarmouth.
R. C. TAYLER, M.R.C.V.S., Queen Street, Colchester.

ASSISTANT VETERINARY OFFICER.

CHARLES HARTLEY, Junr., 43 Friars Lane, Lincoln.

AWARDS OF PRIZES AT NORWICH, 1911.

ABBREVIATIONS.

I., First Prize. II., Second Prize. III., Third Prize. IV., Fourth Prize.
V., Fifth Prize. E. N., Reserve Number. H. C., Highly Commended.

N.B.—The responsibility for the accuracy of the description or pedigree, and for the eligibility to compete of the animals entered in the following classes, rests solely with the Exhibitors.

Unless otherwise stated, each Prize Animal in the Classes for Horses, Cattle, Sheep, and Pigs was "bred by Exhibitor."

HORSES.

Shires.

No in
Cata-
logue.

Class 1.—*Shire Stallions, foaled in 1910.*¹

[8 entries, 3 absent.]

- 5 I. (£20, & E. N. for Champion.²)—LORD ROTHSCHILD, Tring Park, Hert., for Champion Challenger, bay, bred by J. G. Williams, Pendley Manor, Tring; s. Childwick Champion 22213, d. Tatton May Queen 49180 by Lockinge Forest King 18867.
- 2 II. (£10.)—A. H. CLARK, Moulton Faugate, Spalding, for Norbury King George, bay, bred by Leopold Salomons, Norbury Park, Dorking; s. Norbury Menestrel 23543, d. Tockholes Belle 55508 by Southgate Honest Tom 16934.
- 8 III. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton, for Primley Champion, bay; s. Tatton Dray King 23777, d. Mollington Movement 48793 by Lockinge Forest King 18867.
- 7 E. N. & H. C.—THE DUKE OF WESTMINSTER, Eaton Hall, Chester, for Eaton Ensign.

Class 2.—*Shire Stallions, foaled in 1909.* [12 entries, 3 absent.]

- 13 I. (£20.)—JAMES FORSHAW & SONS, Carlton-on-Trent, Newark, for Leonardo 28462, brown, bred by C. P. Yates, Catterall Hall, Gar-tang; s. Leo 2nd 23432, d. Catterall Beauty 38425 by Sir George of Willington 16975.
- 17 II. (£10.)—LORD MIDDLETON, Birdsall House, Malton, for Birdsall Forest King 28184, bay, bred by W. Webster, Stockton-on-Forest, York; s. Redlynch Forest King 23626, d. Folville Petrel 47086 by Benedick 17761.
- 10 III. (£5.)—A. H. CLARK, Moulton Faugate, Spalding, for Moulton Victor King 28590, bay, bred by J. G. Williams, Pendley Manor, Tring; s. Lockinge Forest King 18867, d. Rose 48144 by Insurgent 11688.
- 20 IV. (£4.)—W. & H. WHITLEY, Primley Farm, Paignton, for Primley Belliver 28679, bay, bred by T. H. B. Freshney, South Somercote, Lincs.; s. Tatton Dray King 23777, d. Clapton Bonny 47487 by Heckington Thumper 2nd 16174.
- 9 E. N. & H. C.—H.M. THE KING, Sandringham, for Golden Rock 2nd.

Class 3.—*Shire Stallions, foaled in 1908.* [18 entries, 5 absent.]

- 28 I. (£20, & Champion.²)—THE DUKE OF DEVONSHIRE, Chatsworth, Chesterfield, for Warton Draughtsman 27595, bay, bred by J. Bullock, Draycott-le-Clay, Sudbury, Derby; s. Tatton Friar 21953, d. Draycott Speculation 56789 by Ercall Wynn 14620.
- 33 II. (£10.)—LORD ROTHSCHILD, Tring Park, Hert., for Blaisdon Jupiter 27051, dark bay, bred by T. Stelton, Walden Court, Newent; s. Montford Jupiter 18940, d. Teddesley May Queen 49584 by Cannock Bar None Conqueror 19443.
- 37 III. (£5.)—THE DUKE OF WESTMINSTER, Eaton Hall, Chester, for Eaton Nonsuch 27301, dark brown; s. Lymn Champion 23582, d. The Nun 21019 by Fear None 4394.
- 37 IV. (£4.)—LEOPOLD SALOMONS, Norbury Park, Dorking, for Dowsby Forest King 27253, bay, bred by J. Jemson, Mill House, Cockerham, Gar-tang; s. Hale Forest King 25252, d. Tidy 52444 by Drayman 23rd 19551.

¹ Prizes given by the Shire Horse Society.

² Champion Gold Medal given by the Shire Horse Society for the best Stallion in Classes 1-3.

Award of Live Stock Prizes at Norwich, 1911. xlix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 25 V. (£4.)—THOMAS EWART, Dunsmore Stud Farm, Rugby, for *Waingroves Jameson* 28909, brown, bred by J. Bingham, Denby, Derby; s. Dunsmore Jameson 17972, d. Redmoor Bluebell 39986 by Menestrel 14180.
- 36 E. N. & H. C.—SIR BERKELEY G. D. SHEFFIELD, BT., Normanby Park, Doncaster, for Normanby Champion.

Class 4.—*Shire Fillies, foaled in 1910.* [18 entries, 8 absent.]

- 43 I. (£20.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, for Marden Constance, bay; s. Norbury Menestrel 23543, d. Marden Peach 54807 by Lockinge Forest King 18867.
- 49 II. (£10.)—LORD ROTHSCHILD, Tring Park, Herts., for *Halstead Duchess 7th*, bay, bred by John Bradley, Halstead, Tilton, Leicester; s. Redlynch Forest King 23626, d. Halstead Duchess 6th 54085 by Menestrel 14180.
- 41 III. (£5.)—THE DUKE OF DEVONSHIRE, Chatsworth, Chesterfield, for *Chatsworth Maud*, bay; s. Halstead Royal Duke 25255, d. Buttercup 53371 by Holker Menestrel 2nd 22451.
- 51 IV. (£4.)—SIR BERKELEY G. D. SHEFFIELD, BT., Normanby Park, Doncaster, for Normanby Royal Girl, bay; s. Halstead Royal Duke 25255, d. County Girl 53508 by Blythwood Kingmaker 18534.
- 40 E. N. & H. C.—THE DUKE OF DEVONSHIRE, for Chatsworth Ann.

Class 5.—*Shire Fillies, foaled in 1909.* [7 entries, 2 absent.]

- 62 I. (£20, & Champion.)—W. & H. WHITLEY, Primley Farm, Paignton, for Lorna Doone 54248, brown, bred by T. Green, The Bank, Welshpool; s. Childwick Champion 22215, d. Bank Roseleaf 5291 by Bank Nil Desperandum 21098.
- 58 II. (£10.)—JOHN BRADLEY, Halstead, Tilton, Leicester, for *Halstead Royal Duchess* 63853, bay; s. Lockinge Forest King 18867, d. Halstead Duchess 3rd 42121 by Menestrel 14180.
- 59 III. (£5.)—ROBERT HEATH, Biddulph Grange, Biddulph, Congleton, for *Carrie Nation* 63162, bay, bred by W. & G. Proudley, Scotterthorpe, Lincoln; s. Redlynch Senator 24557, d. Scotterthorpe Star 61771 by Plum Dough 22676.
- 57 E. N. & H. C.—E. W. BETTS, Babingley, King's Lynn, for Babingley Forest Queen.

Class 6.—*Shire Fillies, foaled in 1908.* [6 entries, 1 absent.]

- 65 I. (£20.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, for Dunsmore Chessie 60183, chestnut, bred by J. & M. Hewitt, Monks Kirby, Lutterworth; s. Dunsmore Raider 21367, d. Jewel's Eve 39317 by Puckrup Prince Harold 18294.
- 68 II. (£10.)—J. ELLIS POTTER, Moor Hall, Aughton, Ormskirk, for *Champion's Choice* 59769, bay, bred by Edward Green, The Moors, Welshpool; s. Childwick Champion 22215, d. Willaston Countess 48726 by Warton Drayman 10223.
- 66 III. (£5.)—ROBERT HEATH, Biddulph Grange, Biddulph, Congleton, for *Cosby Melody* 59917, bay, bred by Elliott Hollier, Croft, Leicester; s. Cosby Albert 23191, d. Mimosa 53128 by Hitehin Conqueror 4438.
- 69 E. N. & H. C.—LEOPOLD SALOMONS, Norbury Park, Dorking, for Abingworth Gipsy.

Class 7.—*Shire Mares, with Foals at foot.* [18 entries, 6 absent.]

- 74 I. (£20, & E. N. for Champion.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, for *Misty Morn* 51759, bay, foaled in 1905, bred by Lord Rothschild, Tring Park, Herts.; s. Birdsell Menestrel 19337, d. Crossmoor 41519 by Crossmoor Carbon 19525. [Foal by His Majesty 3rd 27425 or Coxford Merlin 26086.]
- 85 II. (£10.)—W. & H. WHITLEY, Primley Farm, Paignton, for *Mollington Movement* 45793, bay, foaled in 1904, bred by C. E. Bruce Fry, Mollington, Banbury; s. Lockinge Forest King 18867, d. Oatthorpe Malmesdon 16589 by Cronton Magna Charta 9165. [Foal by Tatton Dray King 23777.]
- 82 III. (£5.)—MRS. E. E. M. SAUBER, Preston Hall, Aylesford, Kent, for *Bodenham Lady* 44222, bay, foaled in 1902, bred by Mrs. Medlicott, Bodenham, Leominster; s. Hereford 18088, d. Bodenham Marchioness 34985 by Hendre Marksman 16715. [Foal by Norbury Menestrel 23543.]
- 76 IV. (£4.)—F. E. MUNTZ, Umberlade, Hockley Heath, for *Kathleen* 60341, dark brown, foaled in 1905, bred by Edward Jackson, Sugnywell Trevor, Rushon; s. Erudig Baronet 20480, d. Darby by Moors Zealot 15731. [Foal by General of Hothfield 25229.]
- 72 V. (£4.)—JAMES FORSEAW & SONS, Carlton-on-Trent, Newark, for *Lady Superior*, bay, foaled in 1905, bred by O. Singleton, Dilworth, Longridge, Preston; s. Alston Hero 2nd 18473, d. Rose by Parrox Rajah 16307. [Foal by Alston Squire 23947.]
- 71 E. N. & H. C.—CHIVERS & SONS, LTD., Histon, Cambridge, for *Raiders Queen*.

¹ Prizes given by the Shire Horse Society.

² Champion Gold Medal given by the Shire Horse Society for the best Mare or Filly in Classes 4-7.

Award of Live Stock Prizes at Norwich, 1911.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 8.—*Shire Colt Foals, the produce of Mares entered in Class 7.*

[8 entries, 4 absent.]

- 93 I. (£10.)—MRS. E. E. M. SAUBER, Preston Hall, Aylesford, Kent, for bay, foaled March 18; s. Norbury Menestrel 23543, d. Bodenham Lady 11222 by Hereford 18086.
 91 II. (£5.)—F. E. MUNTZ, Umberslade, Hockley Heath, for Umberslade Heirloom, bay, foaled April 14; s. General of Hothfield 23229, d. Ruddington Harpers 40074 by Calwich Heirloom 14547.
 95 III. (£3.)—ROBERT A. YERBURGH, M.P., Woodfold Park, Blackburn, for brown, foaled April 1; s. Heale Adonis 25273, d. Maid of the Forest 51633 by Lockinge Forest King 18387.
 89 R. N. & H. C.—CHIVERS & SONS, Ltd., Histon, Cambridge, for Histon Star.

Class 9.—*Shire Filly Foals, the produce of Mares entered in Class 7.*

[8 entries, 1 absent.]

- 97 I. (£10.)—SIR WALPOLE GREENWELL, Bt., Marden Park, Woldingham, for bay, foaled April 2; s. Childwick Champion 22215, d. Childwick Rosemary 35374 by Burton Coming King 11071.
 102 II. (£5.)—SIR EDWARD STERN, Fan Court, Chertsey, for Queen May, black, foaled Feb. 4; s. Danesheld Stonewall 23214, d. Buscot Fantasy 47384 by Conqueror of Waresley 15909.
 99 III. (£3.)—E. E. PEARSON, Brickendonbury, Hertford, for brown, foaled Feb. 1; s. Coleshill Forester 24149, d. Saxon Violet 26831 by Saxon Sam 15340.
 96 R. N. & H. C.—JAMES FORSHAW & SONS, Carlton-on-Trent, Newark, for Carlton Princess.

Clydesdales.¹

Class 10.—*Clydesdale Stallions, foaled in 1910.* [10 entries, 1 absent.]

- 113 I. (£20, & R. N. for Champion.²)—T. PURDIE SOMERVILLE, Sandilands, Lanark, for Scotland's Favourite, brown, bred by J. Ernest Kerr, Harviestoun Castle, Dollar; s. Royal Favourite 10630, d. Pvrene 19575 by Baron's Pride 9122.
 109 II. (£10.)—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright, for black, bred by H. B. Marshall, Rachan, Broughton, Peeblesshire; s. Baron's Pride 9122, d. Sarcelle 28861 by Everlasting 11331.
 106 III. (£5.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for Dunure Social Friend, black, bred by J. Gray, Longue, Tarholton; s. Baron of Buchlyvie 11263, d. Bessie of Longue 16113 by Royal Gartly 9844.
 108 R. N. & H. C.—A. & W. MONTGOMERY, for bay.

Class 11.—*Clydesdale Stallions, foaled in 1909.* [5 entries, none absent.]

- 116 I. (£20.)—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright, for Premier Baron 15984, bay, bred by J. P. Sleigh, St. Johns Wells, Fyvie; s. Baron's Pride 9122, d. Nellie of Fyvie 20364 by Mercutio 11431.
 117 II. (£10.)—A. & W. MONTGOMERY, for Royal Purple 16034, black, bred by George Argo, Petty, Fyvie; s. Everlasting 11331, d. Dull of Petty 17307 by Prince of Carlung 7146.
 118 III. (£5.)—GEORGE WATSON, Lowfieldhouse, Wigton, for General Miller, brown, bred by J. Miller, Milton, Kilmaccolm; s. Sir Hugo 10624, d. Milton Favourite 23909 by Rothesay Bay 10624.
 114 R. N. & H. C.—WILLIAM DUNLOP, Dunure Mains, Ayr, for Hugo Pride.

Class 12.—*Clydesdale Stallions, foaled in 1908.* [4 entries, 1 absent.]

- 122 I. (£20, & Champion.²)—A. & W. MONTGOMERY, Netherhall and Banks, Kirkcudbright, for Royal Warden 16045, bay, bred by J. Merson, Craigwillie, Huntly; s. Everlasting 11331, d. Gem of Craigwillie 21597 by Prince Thomas 10232.
 119 II. (£10.)—MAJOR SPENCER F. CHICHESTER, Embley Park, Romsey, for Special Blend 15435, bay, bred by W. Jackson, Shieldhill, Carlisle; s. Dunure Blend 11691, d. Lady Wyndham 23856 by Gay Wyndham 6778.
 120 III. (£5.)—COUNTY LIVE STOCK INSURANCE ASSOCIATION, LTD., County Insurance Buildings, York, for Cock of the South, brown, bred by H. T. Walker, North Moor Farm, Silksworth, Sunderland; s. Cock o' th' North 12102, d. Rosemary's Last 18466 by Tyndale Prince 10473.

Class 13.—*Clydesdale Fillies, foaled in 1910.* [9 entries, 2 absent.]

- 131 I. (£20.)—STEPHEN MITCHELL, Boquhan, Kippen Station, for Nannis, bay, bred by James Gray, Birkenwood, Gargunnoch; s. Apukwa 14567, d. Lady Jane 19569 by Balmedie Queens Guard 10666.

¹ £50 towards these Prizes were given by the Clydesdale Horse Society.

² Champion Prize of £10 given by the Clydesdale Horse Society for the best Stallion in Classes 10-12.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 128 II. (£10.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for Harviestoun Phyllis, brown; s. Royal Favourite 10630, d. Chester Princess 16371 by Baron's Pride 9122.
 128 III. (£5.)—HENRY B. MARSHALL, Rachan, Broughton, Peeblesshire, for bay, bred by T. Gibson, Hightown, Dumfries, s. Gartly Bonus 13491, d. Nell 2nd 22785 by Rubicon 10894.
 124 R. N. & H. C.—WILLIAM DUNLOP, Dunure Mains, Ayr, for Dunure Black Silk.

Class 14.—Clydesdale Fillies, foaled in 1909. [6 entries, none absent.]

- 134 I. (£20, & R. N. for Champion.¹)—WILLIAM DUNLOP, Dunure Mains, Ayr, for Dunure Myrene (vol. 32 p. 280), bay, bred by R. Waldie Murcleugh, Lauder; s. Baron of Buchlyvie 11263, d. Murcleugh Belle 18447 by Montrave Mac 9958.
 136 II. (£10.)—HENRY B. MARSHALL, Rachan, Broughton, Peeblesshire, for Honey Moon, brown, bred by Cameron, Luncluden Mains, Dumfries, s. Scottish Crest 13182, d. by Royal Edward 11495.
 135 III. (£5.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for Harviestoun Amy, bay, bred by W. G. Campbell, High Borgue, Kirkcudbright; s. Baron's Pride 9122, d. Maud of High Borgue 15980 by Montrave Mac 9958.
 133 R. N. & H. C.—HENRY DOBINSON & SON, Helsington Lathes, Kendal, for Belsington Princess.

Class 15.—Clydesdale Fillies, foaled in 1908. [7 entries, 3 absent.]

- 138 I. (£20.)—ROBERT BRYDON, The Dene, Seaham Harbour, for Silver Queen, bay, bred by the Seaham Stud Company, Seaham Harbour; s. Silver Cup 11184, d. Seaham Queen by Lord Stewart 10084.
 142 II. (£10.)—STEPHEN MITCHELL, Boquhan, Kippen Station, for Sweet Melody (vol. 31, p. 405), brown, bred by James Dunlop, Oldhall, Fenwick; s. Hiawatha 10067, d. Harmony 21278 by Baron of Buchlyvie 11263.
 140 III. (£5.)—WILLIAM DUNLOP, Dunure Mains, Ayr, for Harviestoun Rose (vol. 31, p. 110), bay, bred by J. Ernest Kerr, Harviestoun Castle, Dollar; s. Marmion 11429, d. Roscedaw 16783 by Baron's Pride 9122.
 139 R. N. & H. C.—MAJOR SPENCER F. CHICHESTER, Embley Park, Romsey, for May.

Class 16.—Clydesdale Mares, with Foals at foot. [7 entries, 4 absent.]

- 148 I. (£20, & Champion.¹)—J. ERNEST KERR, Harviestoun Castle, Dollar, for Peggy Pride, bay, foaled in 1905, bred by W. Muir, Newhouse, Kirkcudbright; s. Baron's Pride 9122, d. Maggie 1st of Newhouse 18077 by Prince Romeo 1844. [Foal by Scotland Yet 14839.]
 149 II. (£10.)—STEPHEN MITCHELL, Boquhan, Kippen Station, for Minnieawa 21620, dark brown, foaled in 1904, bred by the late St. Clair Cunningham, Hedderwick Hill, Dunbar; s. Hiawatha 10067, d. White Heather 18022 by Baron's Pride 9122. [Foal by Baron of Buchlyvie 11263.]

Class 17.—Clydesdale Foals, the produce of Mares entered in Class 16.
 [6 entries, 3 absent.]

- 156 I. (£10.)—STEPHEN MITCHELL, Boquhan, Kippen Station, for dark brown colt, foaled March 24; s. Baron of Buchlyvie 11263, d. Minnieawa 21620 by Hiawatha.
 156 II. (£5.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for bay colt, foaled May 10; s. Scotland Yet 14839, d. Peggy Pride by Baron's Pride 9122.
 157 III. (£3.)—STEPHEN MITCHELL, for brown colt, foaled March 21; s. Hiawatha 10067, d. Thelma 2nd (vol. 30, p. 211) by Baron's Pride 9122.

Suffolks.²

Class 18.—Suffolk Stallions, foaled in 1910. [6 entries, 3 absent.]

- 158 I. (£20.)—KENNETH M. CLARE, Sudbourne Hall, Orford, Suffolk, for Sudbourne Aerialite 3902; s. Sudbourne Arabi 3287, d. Sudbourne Daylight 5924 by Dennington Cupbearer 3088.
 161 II. (£10.)—SIR OUTHERBT QUILTER, BT., Bawdsey Manor, Woodbridge, for Bawdsey Harvest King 3879; s. Bawdsey Harvester 5076, d. Bawdsey Marguerite 3733 by Eclipse 2627.
 162 III. (£5.)—A. CARLYLE SMITH, Ashmoor, Campsea Ashes, Wickham Market, for Ashmoor Lord Gray 3886, bred by W. Gray, Farham Hall, Wickham Market; s. Saturn 2653, d. Daisy 4398 by Sutton Swell 2636.

¹ Champion Prize of £10 given by the Clydesdale Horse Society for the best Mare or Filly in Classes 13-16.

² £50 towards these Prizes were given by the Suffolk Horse Society, and £48 by the Norwich Local Committee.

lii *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 19.—Suffolk Stallions, foaled in 1909. [16 entries, 2 ab-sent.]

- 170 I. (£20, & Champion.)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Morston Peter 3681, bred by E. Williams, The Hall, Alderton; s. Harvester 3076, d. *Magpie by Herewood 2233.*
 169 II. (£10.)—ARTHUR T. PRATT for Morston Joan 3657, bred by E. Williams, The Hall, Alderton; s. Harvester 3076, d. *Nightlight 4800 by Gay Monarch 2615.*
 167 III. (£5.)—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, for Easton Rum Punch 3088; s. Dennington Cupbearer 3080, d. *Brandy 6757 by Bowler Minstrel.*
 168 R. N. & H. C.—ARTHUR T. PRATT, for Morston Honor.

Class 20.—Suffolk Stallions, foaled in 1908. [9 entries, none absent.]

- 183 I. (£20, & R. N. for Champion.)—ARTHUR T. PRATT, Morston Hall, Trimley, Ipswich, for Morston Samson 3889, bred by H. Cross, Ixworth, Bury St Edmunds; s. Foniham Comet 3371, d. *Violet by Cockfield Prince 3073.*
 185 II. (£10.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for Bawdsey Volunteer 3628; s. Bentley War Cry 3028, d. *Golden Drop 5010 by Golden Gram 2179.*
 182 III. (£5.)—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, for Easton Prince 3693, bred by S. G. Carley, Saxtead, Framlingham; s. Dennington Cupbearer 3086, d. *Ruby by Border Minstrel 2287.*
 181 R. N. & H. C.—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Minstrel.

Class 21.—Suffolk Stallions, foaled in or before 1907. [6 entries, 2 absent.]

- 162 I. (£20.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for Bawdsey Laddie 3637, foaled in 1907; s. Bawdsey Harvester 3076, d. *Woolpit Lass 4109 by Worcester 2270.*
 193 II. (£10.)—SIR CUTHBERT QUILTER, BT., for Bawdsey Marshall Ney 3585, foaled in 1906; s. Napoleon 2133, d. *Bawdsey Mary 4910 by Prince Wedgewood 2381.*
 194 III. (£5.)—A. CARLYLE SMITH, Ashmoor, Campsea Ash, Wickham Market, for Ashmoor Brogue 3751, foaled in 1906, bred by F. Smith, Woodbridge; s. Rendlesham Goldsmith 3095, d. *Brocade 3434 by Wedgewood 1749.*

Class 22.—Suffolk Fillies, foaled in 1910. [8 entries, 3 absent.]

- 210 I. (£20.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for Bawdsey Bloom 7034; s. Bawdsey Harvester 3076, d. *Ramsbolt Blossom 3716 by Prince Arthur 2268.*
 198 II. (£10.)—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, for Easton Comet 7039, bred by the late L. Smith, Hasketon, Woodbridge; s. Saturn 2853, d. *Hasketon Bloom 6231 by Prince Albert 2523.*
 197 III. (£5.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Winnie 6782; s. Sudbourne Arabi 3287, d. *Sudbourne Winnipeg 5437 by The Czar 1754.*
 196 R. N. & H. C.—KENNETH M. CLARK, for Sudbourne Twinkle.

Class 23.—Suffolk Fillies, foaled in 1909. [9 entries, 2 absent.]

- 203 I. (£20.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Arcadia 6697; s. Sudbourne Sunshine 3374, d. *Sudbourne Arabelle 5172 by Wedgewood 1749.*
 204 II. (£10.)—KENNETH M. CLARK, for Sudbourne Belladonna 6711; s. Sudbourne Arabi 3287, d. *Sudbourne Beauty 6511 by Prince Albert 2325.*
 205 III. (£5.)—THE MARQUIS OF GRAHAM, Easton Park, Wickham Market, for Easton Lady in Waiting 6731, bred by S. G. Carley, Saxtead, Framlingham; s. Dennington Cupbearer 3086, d. *Belle 3088 by Wedgewood 2245.*
 211 R. N. & H. C.—ALFRED J. SMITH, Rendlesham, Woodbridge, for Rendlesham Belle.

Class 24.—Suffolk Fillies, foaled in 1908. [6 entries, 1 absent.]

- 215 I. (£20.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for Bawdsey Minerva 6149; s. Bawdsey Harvester 3176, d. *Sutton Venus 5693 by Mars 2131.*
 217 II. (£10.)—A. CARLYLE SMITH, Ashmoor, Campsea Ash, Wickham Market, for Ashmoor Lady Jane 7012, bred by J. Capon, Dennington, Framlingham; s. Oliver 3227, d. *Lady 4620 by Sutton Swell 2686.*
 213 III. (£5.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Guilda 6422; s. Sudbourne Sunshine 3374, d. *Sudbourne Gussie 5847 by Lowestoft 1909.*
 212 R. N. & H. C.—KENNETH M. CLARK, for Sudbourne Cowslip.

¹ "Coronation" Challenge Cup given by the Suffolk Horse Society for the best Stallion in Classes 18-21.

Award of Live Stock Prizes at Norwich, 1911. liii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 25.—*Suffolk Mares, with Foals at foot.* [9 entries, 3 absent.]

- 221 I. (£20.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for Bawdsey Wardoll 6493, foaled in 1907; s. Bawdsey Harvester 3076, d. Bawdsey China Doll 4299 by Prince Wedgewood 2364. [Foal by Bentley War Cry 3028.]
 218 II. (£10.) J. BARRELL, Coddendam Hall, near Ipswich, for Queen of Coddendam 5716, foaled in 1904; s. Butley Marquis 2572, d. Queenie by Wedgewood 1749. [Foal by Dennington Cupbearer 3086.]
 219 III. (£5.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Bristle 5770, foaled in 1900, bred by Thomas Pettit, Saxmundham; s. Lord Peyton 2665, d. Brisk 2281 by Cupbearer 3rd 568. [Foal by Sudbourne Arabi 3287.]

Class 26.—*Suffolk Foals, the produce of Mares entered in Class 25.*

[9 entries, 3 absent.]

- 228 I. (£10.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for filly, foaled Jan. 26; s. Sudbourne Arabi 3287, d. Sudbourne Bristle 5770 by Lord Peyton 2665.
 227 II. (£5.)—J. BARRELL, Coddendam Hall, near Ipswich, for colt, foaled March 13; s. Dennington Cupbearer 3086, d. Queen of Coddendam 5716 by Butley Marquis.
 233 III. (£3.)—SIR CUTHBERT QUILTER, BT., Bawdsey Manor, Woodbridge, for filly, foaled Feb. 24; s. Bentley War Cry 3028, d. Bawdsey Wardoll 6493 by Bawdsey Harvester 3076.
 235 E. N. & H. C.—THE EARL OF STRADBROKE, Henham Hall, Wangford, for Henham Goldreef.

Draught Horses.¹

Class 27.—*Draught Geldings, foaled in 1907 or 1908.* [7 entries, none absent.]

- 211 I. (£20.)—SIR PETER C. WALKER, BT., Osmaston Manor, Derby, for Cheshireman (Shire), brown, foaled in 1908, bred by S. Barker, Rushton, Tarporley; s. Rustic Friar 21580, d. Orford Maggie 42907 by Rokeby Portland 15798.
 230 II. (£10.)—FRED BRAZIER, Grandborough, Winslow, for Worsley Special (Shire), brown, foaled in 1908, bred by R. H. Rowe, Tutbury, Burton-on-Trent; s. Markcuton Special Brand 22572, d. Brisk 53268 by Pride of Bladon 6272.
 239 III. (£5.)—THOMAS NESBITT, Abington Grange, Cambridge, for black (Olden'sdale and Shire), foaled in 1907; s. Moulton Enterprise, d. Lady Wolsley by Lord Wolsley.
 237 E. N. & H. C.—R. H. CURRIE, Moulsham Lodge, Chelmsford, for Moulsham Boss.

Hunters.²

Class 28.—*Hunter Colts or Geldings, foaled in 1910.* [10 entries, 2 absent.]

- 249 I. (£20.)—WILLIAM H. SHIERS, The Red House, Hartford, Cheshire, for Walnut, bay colt, bred by F. B. Wilkinson, Cavendish Lodge, Edwinstowe, Newark; s. Blankney, d. Beechnut 2nd 3284.
 247 II. (£10.)—ERNEST W. ROBINSON, Liscombe, Leighton Buzzard, for Village Blacksmith, chestnut colt; s. Hackenschmidt (vol. 20, p. 892, G.S.B.), d. Chorus Girl 2nd by Riverstown (vol. 17, p. 701, G.S.B.).
 245 III. (£5.)—CHARLES J. C. HILL, Glentworth Hall, Lincoln, for Fairfield, bay colt, bred by A. O. Haslewood, Fairfield, Buxton; s. Ormston, d. Countess.
 248 E. N. & H. C.—PANDIA P. RODOCANACHI, Dunchurch, near Rugby, for Freshwater.

Class 29.—*Hunter Geldings, foaled in 1909.* [14 entries, 2 absent.]

- 257 I. (£20.)—LORD MIDDLETON, Birdsall House, Malton, for Syntax, chestnut; s. Wales, d. Sympathy by Gordon.
 204 II. (£10.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Bluebeard (Supp. No. 62), chestnut, bred by A. Spencer, Oxhill, Kineton; s. Svengali, d. by Pathfinder.
 256 III. (£5.)—LORD MIDDLETON, for Hotspur (Supp. No. 87), bay; s. Wales, d. Hollyhock 3453 by Gordon.
 262 IV. (£4.)—MRS. J. M. WALMSLEY, The Priory, Tetbury, for Royalist (Supp. No. 75), black, bred by M. Holloway, Kingscote, Tetbury; s. Royal Bounty, d. by Peppermint.
 254 E. N. & H. C.—SIR MERRIK BURELL, BT., Knepp Castle, Horsham, for Sunbeam.

Class 30.—*Hunter Geldings, foaled in 1908.* [16 entries, 6 absent.]

- 273 I. (£20.)—A. R. MIDWOOD, Fern Hill, Knutsford, for Cavendish, brown, bred by W. Severs Green Hammerton, York.
 278 II. (£10.)—THE DUCHESS OF NEWCASTLE, Clumber, Workop, for Clumber Jupiter, dark bay; s. Whitehall 1888, d. Ripple by St. Gilmer.

¹ Prizes given by the Norwich Local Committee.

² £100 towards these Prizes were given by a Member of the R.A.S.E. interested in the breeding of Hunters.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 267 III. (£5.)—W. R. CLARKE, Debden Hall, Loughton, Essex, for Curiosity (Supp. No. 30), chestnut; s. Intaglio, d. Flash 2nd 3956 by Travles.
 268 IV. (£4.)—MRS. ROBERT COTTRILL, Sandal Lodge, Droitwich, for Conder (Supp. No. 67), chestnut, bred by D. Haward, Carrigwohill; s. Ben, d. by Baron Farney.
 272 R. N. & H. C.—COLONEL H. JEROME, C.B., Bilton Hall, York, for Ludlow.

Class 31.—Hunter Fillies, foaled in 1910. [13 entries, 4 absent.]

- 287 I. (£20, & Champion.¹)—MARY, DUCHESS OF HAMILTON, Easton Park, Wickham Market, for chestnut; s. St. Jacques, d. Mama.
 286 II. (£10.)—MAJOR-GEN. GOLDSWORTHY, C.B., Yaldham Manor, Kemsing, Sevenoaks, for Pearl 2nd 3998, chestnut; s. Battlement, d. Diamond 3365 by Eglamore.
 285 III. (£5.)—SIR WALTER GILBEY, BT., Eisenham Hall, Essex, for Bouncey Bella, brown; s. Flambeau 67, d. Falmouth Belle.
 283 IV. (£4.)—SIR MERRILL BURRELL, BT., Knepp Castle, Horsham, for Sunray 4046, chestnut; s. Red Heart, d. Surrenden 3757.
 284 R. N. & H. C.—THE REV. ALFRED L. FELLOWES, Shotesham Vicarage, Norwich, for Powder.

Class 32.—Hunter Fillies, foaled in 1909. [10 entries, none absent.]

- 303 I. (£20, & R. N. for Champion.¹)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Juliet 3rd 4053, chestnut, bred by H. Hetherington, Armathwaite, Cumberland; s. Time Table.
 302 II. (£10.)—WILLIAM SEVER, Wilstrop Hall, Green Hammerton, York, for Actress 7th 4068, brown; s. Atlas, d. Blue Bell 2nd 4067 by Langton 2nd.
 297 III. (£5.)—MRS. MERRILL BURRELL, Carham Hall, Coldstream, for Sealene 3707, chestnut; s. Gold, d. The Rhomb 3777 by Isosceles.
 300 R. N. & H. C.—CHARLES J. C. HILL, Glentworth Hall, Lincoln, for Miss Selby.

Class 33.—Hunter Fillies, foaled in 1908. [8 entries, 2 absent.]

- 312 I. (£20.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Lucy Grey, bay; s. Barbarian, d. Lucy Grey 2611 by Duke of Portland.
 311 II. (£10.)—E. S. TOMLINSON, Rauceby, near Grantham, for Travelling Lady 3782, chestnut, bred by C. W. Cross, Marnham Hall, Newark; s. Travelling Lad, d. Tet by Blue Blood.
 309 III. (£5.)—BERTRAM W. TALBOT, Blickling Lodge, Aylsham, for Tablet, brown; s. Hindley, d. Abbess.
 310 R. N. & H. C.—W. HERBERT TAYLOR, Lower Woodfield, Newland, Malvern, for Lady Somerset 2nd.

Class 34.—Hunter Mares, with Foals at foot, up to from 12 to 14 stone.

[21 entries, 6 absent.]

- 315 I. (£20, Champion.² & Cup.³)—SIR MERRILL BURRELL, BT., Knepp Castle, Horsham, for Casual (vol. I), bay, foaled in 1901, bred by the Earl of Lonsdale, Barleythorpe, Oakham; s. Castlenock 2, d. Sister Mary by Brown Prince. [Foal by Hanover Square.]
 326 II. (£10.)—PANDIA P. RODOCANACHI, Dunchurch, near Rugby, for Fleur-de-Lys 3344, bay, foaled 1898, bred by R. N. Byass, Stow-on-the-Wold; s. Herald, d. Tormonte by The Lawyer. [Foal by Red Sahib.]
 325 III. (£5.)—ERNEST W. ROBINSON, Liscombe, Leighton Buzzard, for Vademescum (vol. 21, p. 848, G.S.B.), brown, foaled in 1903, bred by R. Downes; s. Hackler (vol. 17, p. 251, G.S.B.), d. Verily by Stylites. [Foal by Chuckaway.]
 316 IV. (£4.)—SIR MERRILL BURRELL, BT., for Surprise 3014, bay, foaled in 1902, bred by Lieut.-Col. Z. Walker, Acock's Green, Birmingham; s. Silver King, d. My Treasure by Hidden Treasure. [Foal by Rousseau.]
 328 V. (£4.)—WILLIAM H. SHIERS, The Red House, Hartford, Cheshire, for Beechnut 2nd 3284, bay, foaled in 1901. [Foal by Squadron Leader.]
 323 R. N. & H. C.—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Paleface.

Class 35.—Hunter Mares, with Foals at foot, up to more than 14 stone.

[7 entries, 1 absent.]

- 327 I. (£20, R. N. for Champion.² & R. N. for Cup.³)—MISS A. W. HIGNETT, Offley Ley, Crewe, for Diana 3366, bay, foaled in 1894, breeder unknown. [Foal by Squadron Leader.]

¹ Champion Gold Medal given by the Hunters' Improvement Society for the best Filly not exceeding three years old, in Classes 31-33, which is registered with a number in the Hunter Stud Book.

² Champion Gold Medal given by the Hunters' Improvement Society for the best Mare, four years and upwards, in Classes 34 and 35, which is registered with a number in the Hunter Stud Book.

³ Silver Cup given by the Richmond Royal Horse Show Society for the best Brood Mare in Classes 34 and 35.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 334 II. (£10.)—SIR MERRICK BURRELL, BT., Knepp Castle, Horsham, for *Speculation* 3733, bay, foaled in 1898, bred by T. & M. Sedgwick, Darlington; s. Pinzon (vol. 17, p. 480) by Luck's All (vol. 11, p. 498) [Foul by Red Heart].
 340 III. (£5.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *Alice* 22nd, chestnut, foaled in 1905, bred by M. Smith, Eaton, near Reiford; s. Top Card, d. by Master Bob [Foul by Billidue].

- 336 E. N. & H. C.—FREDERICK HARDY, Staunton Hall, Nottingham, for *Portland Duchess*.

Class 36.—Hunter Colt Foals, the produce of Mares in Classes 34 or 35.

[8 entries, 2 absent.]

- 344 I. (£10.)—MAJOR-GENERAL GOLDSWORTHY, C.B., Yaldham Manor, Kemming, Sevenoaks, for chestnut, foaled April 10: s. Red Heart, d. Diamond 3365 by Eglamore.
 348 II. (£5.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for chestnut, foaled March 21: s. Avarice, d. Paleface.
 346 III. (£3.)—ERNEST W. ROBINSON, Liscombe, Leighton Buzzard, for brown, foaled March 3: s. Chuckaway (vol. 20, p. 854, G S B), d. Vadamecum (vol. 21, p. 848, G S B) by Hackler (vol. 17, p. 251, G S B).
 345 E. N. & H. C.—FREDERICK HARDY, Staunton Hall, Nottingham.

Class 37.—Hunter Filly Foals, the produce of Mares in Classes 34 or 35.

[16 entries, 4 absent.]

- 355 I. (£10.)—MISS A. W. HIGNETT, Offley Ley, Crewe, for bay, foaled March 25: s. Squadron Leader, d. Diana.
 352 II. (£5.)—DAVID DAVIES, M.P., Plas Dinam, Llandinam, for *Florodora*, bay, foaled March 21: s. Pedlar Brand, d. Florence 3408.
 350 III. (£3.)—SIR MERRICK BURRELL, BT., Knepp Castle, Horsham, for *Amazon*, chestnut, foaled April 24: s. Red Heart, d. *Speculation* 3733 by Pinzon.
 363 E. N. & H. C.—BERTRAM W. TALBOT, Bickling Lodge, Aylsham.

Hunter Riding Classes.¹

Class 38.—Hunter Mares or Geldings, foaled in 1907, up to from

12 to 14 stone. [5 entries, none absent.]

- 367 I. (£15.)—JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *King George*, chestnut gelding.
 366 II. (£10.)—THE REV ALFRED L. FELLOWES, Shotesham Vicarage, Norwich, for *St. Andrew*, bay gelding, s. St. Lorenzo, d. Petrel 2nd 3629 by Jupiter Tonans Colt.
 368 III. (£5.)—E. S. TOMLINSON, Rauceby, near Grantham, for *Grey Friar*, grey gelding.
 365 IV. (£3.)—R. H. ALLEN, Hackford, Attleborough, for brown gelding, bred by W. Goodwyn, East Winch, King's Lynn; s. Master Lovat, d. Gaberdene by Asctec.

Class 39.—Hunter Mares or Geldings, foaled in 1907, up to more than 14 stone.

[4 entries, 1 absent.]

- 373 I. (£15.)—JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *Golden Amber*, chestnut gelding, bred by M. Blakey, Coxwold, Yorks.; s. Red Eagle, d. by Ambergris.
 370 II. (£10.)—F. GORDON COLMAN, Littleburgh, Burgh Heath, Surrey, for *Cairo*, bay gelding; s. Riverstown, d. Homely Lass by Homely.
 372 III. (£5.)—HAROLD LOWTHER and J. M. LONGE, The Hotel, Northwood, Middlesex, for *Paddy*, bay gelding, breeder unknown.

Class 40.—Hunter Mares or Geldings, Novice, foaled in or before 1906,

up to from 12 to 14 stone. [11 entries, 2 absent.]

- 384 I. (£15.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for *In the Gloaming*, chestnut gelding, foaled in 1903.
 374 II. (£10.)—SIR MERRICK BURRELL, BT., Knepp Castle, Horsham, for *Red Hawke*, bay gelding, foaled in 1906.
 383 III. (£5.)—THE COUNTESS OF WARWICK, Warwick Lodge, Melton Mowbray, for *Frank*, chestnut gelding, foaled in 1905, breeder unknown.
 376 IV. (£5.)—JOHN DRAGE, Chapel Brampton, Northampton, for *Bound Over*, bay gelding, foaled in 1906, breeder unknown.
 382 V. (£3.)—JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *Courtier*, brown gelding, foaled in 1906.
 377 E. N. & H. C.—GORDON B. FOSTER, The Hall, Thorne, Yorks, for *Whitley Bridge*.

Class 41.—Hunter Mares or Geldings, Novice, foaled in or before 1906, up to more than 14 stone. [11 entries, 2 absent.]

- 393 I. (£15.)—JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for *Dignity*, chestnut gelding, foaled in 1904.

¹ Prizes given by the Norwich Local Committee.

[Unless otherwise stated, each prize animal named below was 'bred by exhibitor.']

- 395 II. (£10.)—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for **Ashton**, chestnut gelding, foaled in 1905.
 387 III. (£5.)—JOHN DRAGE, Chapel Brampton, Northampton, for **Domino**, bay gelding, foaled in 1906, breeder unknown.
 384 IV. (£5.)—THE COUNTESS OF WARWICK, Warwick Lodge, Melton Mowbray, for **August**, brown gelding, foaled in 1906, breeder unknown.
 389 V. (£5.)—MAJOR GEOFFREY GLYN, Melchbourne Priory, Sharnbrook, for **Ballinleen**, bay gelding, foaled in 1905, bred by W. Kearney, Ballinleen, Bansha; s. Ormelio, d. York.
 391 R. N. & H. C.—CAPTAIN M. HILL, Westwood House, West Bergholt, Essex, for **Rocklight**.

Class 42.—Hunter Mares or Geldings, foaled in or before 1907, up to from 12 to 137 stone. [19 entries, 1 absent.]

- 404 I. (£20.)—THE COUNTESS OF WARWICK, Warwick Lodge, Melton Mowbray, for **Zealot**, chestnut gelding, foaled in 1905, bred by R. L. Fenwick, Little Belvoir, Melton Mowbray; s. Whisperer, d. by Zeal.
 396 II. (£15.)—R. C. N. ASHTON, The Cottage, Doveridge, Derby, for **Thermos**, brown gelding, foaled in 1903.
 397 III. (£10.)—J. H. DUNN, Coombe Cottage, Kingston Hill, for **Barbison**, grey gelding, foaled in 1906, bred by W. Jordison, Carlton Lodge, Thirsk; s. Boykin, d. Snowdrop by Entertainer.
 402 IV. (£5.)—JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for **Suspense**, bay gelding, foaled in 1906.
 374 V. (£5.)—SIR MERRIK BURRELL, BT., for **Red Hawks**. (See Class 40.)
 376 R. N. & H. C.—JOHN DRAGE, Chapel Brampton, Northampton, for **Bound Over**.

Class 43.—Hunter Mares or Geldings, foaled in or before 1907, up to more than from 137 and not more than 15 stone. [15 entries, 4 absent.]

- 386 I. (£20, & R. N. for Champion.¹)—JOHN DRAGE, Chapel Brampton, Northampton, for **Red Eagle**, chestnut gelding, foaled in 1905, breeder unknown.
 407 II. (£15.)—W. A. SIMPSON-HINCHLIFFE, 9, Park Parade Stables, Harrogate, for **Broadwood** (Supp. No. 7), brown gelding, foaled in 1903, bred by J. Richardson, Saltown Manor, York; s. Red Eagle, d. by Selby.
 411 III. (£10.)—THE COUNTESS OF WARWICK, Warwick Lodge, Melton Mowbray, for **Gold Flame**, bay gelding, foaled in 1905, breeder unknown.
 387 IV. (£5.)—JOHN DRAGE, for **Domino**. (See Class 41.)
 410 V. (£5.)—JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for **Impudence**, bay gelding, foaled in 1905.
 408 R. N. & H. C.—GORDON B. FOSTER, The Hall, Thorne, Yorks, for **Recruit**.

Class 44.—Hunter Mares or Geldings, foaled in or before 1907, up to more than 15 stone. [13 entries, 1 absent.]

- 416 I. (£20, & Champion.¹)—JOHN H. STOKES, Nether House, Great Bowden, Market Harborough, for **Forensic**, bay gelding, foaled in 1906.
 415 II. (£15.)—JOHN DRAGE, Chapel Brampton, Northampton, for **John O'Gaunt**, bay gelding, foaled in 1906, breeder unknown.
 395 III. (£10.)—F. B. WILKINSON for **Ashton**. (See Class 41.)
 393 IV. (£5.)—JOHN H. STOKES, for **Dignity**. (See Class 41.)
 414 V. (£5.)—JOHN DRAGE for **Brown Bread**, bay gelding, foaled in 1906, breeder unknown.
 394 R. N. & H. C.—THE COUNTESS OF WARWICK, for **August**.

Polo and Riding Ponies.²

Class 45.—Polo and Riding Pony Stallions, foaled in or before 1906, not exceeding 142 hands. [5 entries, none absent.]

- 419 I. (£15, & Champion.³)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for **Othrae** 447, bay, foaled in 1905, bred by W. E. Elsey, Baumber; s. Raeburn d. Othry by King Monmouth.
 421 II. (£10, & R. N. for Champion.³)—LORD LUCAS, Wrest Park, Ampthill, for **Jacko** 442, chestnut, foaled in 1904, bred by J. Lonsdale; s. Jacquemart, d. Mareca by Cherry Ripe.
 418 III. (£5.)—JAMES F. B. BAILLIE, Dochfour, Inverness, for **Sammy The Verger** 503, chestnut, foaled in 1906, bred by C. Mynors, Sudbury, Derby; s. Avington, d. Gold Flake by Esterling.
 422 R. N. & H. C.—C. HOWARD TAYLOR, Hampole Priory, Doncaster, for **Field Marshall**.

¹ Gold Challenge Cup given by gentlemen interested in Hunters for the best Mare or Gelding in Classes 38-44.

² £40 towards these Prizes were given by the Polo and Riding Pony Society.

³ Champion Gold Medal given by the Polo and Riding Pony Society for the best Stallion or Colt in Classes 45-47.

Award of Live Stock Prizes at Norwich, 1911. lvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 46.—Polo and Riding Pony Colts, Fillies, or Geldings, foaled in 1910.
[9 entries, none absent.]

424 I. (£15.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Right Boy, bay colt; s. Right For'ard 368, d. Baby Girl by Sandiway 121.

425 II. (£10.)—SIR JOHN BARKER, BT., for Sandipix (Supp. 1911), bay colt; s. Sandiway 121, d. Pixie 1615 by Marmiton.

431 III. (£5.)—W. & H. WHITLEY, Primley Farm, Paignton, for Primley Crystal, bay filly; s. Bold Marco 352, d. Doreen.

423 R. N. & H. C.—SIR JOHN BARKER, BT., for Lady Buckingham.

Class 47.—Polo and Riding Pony Colts, Fillies, or Geldings, foaled in 1909.
[10 entries, none absent.]

437 I. (£15.)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for Sparkling Crocus (Supp. 1910), chestnut filly; s. Merry Matchmaker, d. Crocus 1471 by Asceic.

434 II. (£10.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Silversmith, bay gelding; s. Right For'ard 368, d. Silvertail 573 by Low Water.

433 III. (£5.)—SIR JOHN BARKER, BT., for Redoun, brown gelding; s. Othrae 447, d. Redoute.

432 R. N. & H. C.—SIR JOHN BARKER, BT., for Bronze.

Class 48.—Polo and Riding Pony Fillies or Geldings, foaled in 1908.

[5 entries, none absent.]

443 I. (£15.)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford, for Colonel, bay gelding; s. Right For'ard 368, d. Black Bella 475 by Blackthorne.

442 II. (£10.)—SIR JOHN BARKER, BT., for Bronzino, bay gelding; s. Garb, d. Brownie 1574.

445 III. (£5.)—H. FAUDEL PHILLIPS, Mapleton Stud, Edenbridge, for Ohit Chat (Supp. 1909-10), chestnut filly, bred by Col. E. N. Henriques, Ambarrow Hill, Sandhurst; s. Mootrub 32, d. Housemaid 1183.

446 R. N. & H. C.—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Market Girl.

Class 49.—Polo and Riding Pony Mares, with Foals at foot, not exceeding

14'2 hands. [4 entries, none absent.]

448 I. (£15, & Champion.¹)—SIR JOHN BARKER, BT., The Grange, Bishop's Stortford; for Silver Star 1020, bay, aged, bred by G. Hutchings, Claremont, Paignton; s. Knight of the Laund, d. by Acrobat. [Foal by Othrae 447.]

449 II. (£10, & R. N. for Champion.¹)—TRESHAM GILBEY, Whitehall, Bishop's Stortford, for Redstone 1780, chestnut, aged. [Foal by Bold Marco 352.]

Hack or Riding Ponies.

Class 50.—Mares or Geldings, Hunter or Polo Type (light weight), foaled in or before 1907, not exceeding 15 hands. [9 entries, 2 absent.]

453 I. (£15.)—WASHINGTON CHARTERS, The Manor, Horringer, Bury St. Edmunds, for chestnut gelding, foaled in 1905, breeder unknown.

455 II. (£10.)—MAJOR C. J. ECCLES, 16th Lancers, Cavalry Barracks, Norwich, for Sylvia 2nd 2183, chestnut mare, foaled in 1905, bred by Sir John Barker, BT., The Grange, Bishop's Stortford; s. Mark For'ard, d. Silver Queen by Sandiway 121.

452 III. (£5.)—MRS. W. C. N. CHAPMAN, Heppington, Canterbury, for Silent Lad, chestnut gelding, foaled in 1906.

459 R. N. & H. C.—P. ROBINSON, Cleveethorpe, Sandal, Wakefield, for Wavney.

Class 51.—Mares or Geldings, Hunter or Polo Type (heavy weight), foaled in or before 1907, not exceeding 15 hands. [5 entries, 3 absent.]

464 I. (£15, & Champion.²)—MAURICE J. KINGSCOTE, Watermoor House, Olrencester, for Bridget, chestnut mare, foaled in 1905.

460 II. (£10.)—THE REV. HARRY E. BECK, Harpley House, King's Lynn, for bay gelding, foaled in 1904, breeder unknown.

Class 52.—Mares or Geldings, Park Hacks (light weight), foaled in or before 1907, exceeding 15 hands. [7 entries, 5 absent.]

467 I. (£15.)—H. FAUDEL PHILLIPS, Mapleton Stud, Edenbridge, for Robin Grey, grey gelding, foaled in 1905, breeder unknown.

468 II. (£10.)—G. MILLARD, Hethel, Norwich, for dark chestnut mare, foaled in 1903.

¹ Champion Gold Medal given by the Polo and Riding Pony Society for the best Mare or Filly in Classes 40-49.

² Prizes given by the Norwich Local Committee.

³ Gold Challenge Cup given by gentlemen interested in Hacks and Riding Ponies for the best Animal in Classes 50-53.

lviii *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 53.—Mares or Geldings, Park Hacks (heavy weight), foaled in or before 1907, exceeding 15 hands [7 entries, 3 absent.]

- 471 I. (£15, & R. N. for Champion¹)—MRS. W. C. N. CHAPMAN, Heppington, Canterbury, for Bergomot, bay gelding, foaled in 1907, bred by J. W. Ford, Ganton, Yorks; s. Wales, d. by Burgomaster.
 473 II. (£10)—H. FAUDEL PHILLIPS, Mapleton Stud, Edenbridge, for The Chocolate Soldier, chestnut gelding, foaled in 1907, bred by Sir John Barker, Bt, The Grange, Bishop's Stortford; s. Jew Boy, d. Lightning by Stowmarket.
 405 III. (£5.)—J. H. DUNN Coombe Cottage, Kingston Hill, Surrey, for Caly-tan (late Premier), chestnut gelding, foaled in 1905
 472 R. N. & H. C.—WASHINGTON CHARTERS, The Manor, Horringer, Bury St. Edmunds.

Cleveland Bays or Coach Horses.

Class 54.—Cleveland Bay or Coaching Stallions, foaled in 1908 or 1909.

[6 entries, 1 absent.]

- 479 I. (£15.)—JOHN LETT, Cleveland Stud Farm, Rillington, York, for Cholderton Luck (Cleveland Bay), foaled in 1908, bred by H. C. Stephens, Cholderton, Salisbury; s. Cholderton Luck's All 1884, d. Rosedale by Wellington.
 477 II. (£10.)—GEORGE ELDERS, Toft House Farm, Aislaby, Sleights, Yorks., for Hawthorn Hero 1710 (Cleveland Bay), foaled in 1908; s. Rosedale 1882, d. Lady Stainthorpe 718 by Hillingdon 986
 482 III. (£5.)—FRANK H. STERICKER, Westgate House, Pickering, for Gauntlet 2518 (Coaching), foaled in 1908, bred by W. Cooper, Hall Farm, Atterington, York; s. Breaston Prince 2451, d. Princess Helen 831 by Luck's All 1114.
 478 R. N. & H. C.—BERT KITCHING, Hungate House, Pickering, for Kitching's Advocate.

Class 55.—Cleveland Bay or Coaching Mares, with Foals at foot.

[3 entries, none absent.]

- 483 I. (£15.)—GEORGE ELDERS, Toft House Farm, Aislaby, Sleights, Yorks., for Hawthorn Beauty 1170 (Coaching), foaled in 1905; s. Rosedale 1882, d. Aislaby Beauty 1169 by Prince George 235. [Foal by Breaston Prince 2451.]
 485 II. (£10.)—FRANK H. STERICKER, Westgate House, Pickering, for Elena 1150 (Coaching), foaled in 1907; s. Aneroid 2419, d. Princess Beatrice 913 by Luck's All 1114. [Foal by Breaston Prince 2451.]

Hackneys.²

Class 56.—Hackney Stallions, foaled in 1910. [15 entries, 2 absent.]

- 488 I. (£20)—HENRY B. BRANDT, Capenor, Nutfield, Surrey, for Capenor Matador, chestnut roan; s. Mathias A 1 10751, d. Madame Pompadour 20070 by Polonius 4931.
 491 II. (£10.)—SIR WALTER GILBEY, Bt, Elsenham Hall, Essex, for Bouncey Antonius, chestnut; s. Antonius 10559, d. Lady Cadet 8024 by Cadet 1261.
 497 III. (£5.)—W. W. RYCROFT, Drake Hill Hackney Stud, Bingley, for Admiral Cliquot, chestnut, bred by W. R. Lysaght, Castleford, Okepstone; s. Leopard 9783, d. Hopwood Clematis 15576 by Rosador 4964.
 500 IV. (£4.)—ROBERT WHITWORTH, Londesborough Stud, Market Weighton, for Euclid, chestnut; s. Polonius 4931, d. Thorpe Molly 19508 by Danebury 4724.
 495 R. N. & H. C.—SIR EDWARD MANN, Bt, Thelveton Hall, Soke, for Thelveton Picador.

Class 57.—Hackney Stallions, foaled in 1909. [12 entries, 2 absent.]

- 510 I. (£20, & R. N. for Champion.³)—W. W. RYCROFT, Drake Hill Hackney Stud, Bingley, for Woodhatch Viceroy 11623, chestnut, bred by R. P. Evans, Woodhatch House, Reigate; s. Hopwood Viceroy 9280, d. Ticonderoga 15480 by Beau Fort 4623.
 506 II. (£10.)—R. A. DE MANCHA, Waterside Stud, Frogmore, St. Albans, for Ver Performer, dark chestnut; s. Elevator 5599, d. Empress of Holderness 10877 by Langton Performer 4844
 507 III. (£5.)—SIR WALTER GILBEY, Bt, Elsenham Hall, Essex, for Sparkling Danegelt 11576, chestnut; s. Royal Danegelt 5785, d. Polly Olga 18109 by Rosador 4961
 512 IV. (£4.)—ROBERT WHITWORTH, Londesborough Stud, Market Weighton, for Aaron 11307, chestnut, bred by R. G. Heaton, Chatteris; s. Polonius 4931, d. St. Agatha 15400 by Garton Duke of Connaught 3009.
 504 R. N. & H. C.—W. H. CLARK, White Hall, Winsted, Hull, for Westlands Polonius.

¹ Gold Challenge Cup given by gentlemen interested in Hacks and Riding Ponies for the best Animal in Classes 50-53.

² £75 towards the Prizes for Hackneys and Hackney Ponies were given by the Hackney Horse Society.

³ Champion Gold Medal given by the Hackney Horse Society for the best Stallion in Classes 56-58.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 58.—Hackney Stallions, foaled in 1908. [9 entries, 1 absent.]

- 517 I. (£20, & Champion.¹)—THE EXORS. OF THE LATE B. LUCAS, Thorpe Underwood, Northampton, for Sprightly Danegelt 11221, chestnut, bred by Sir Walter Gilbey, Bt., Elsenham Hall, Essex; s. Royal Danegelt 5785, d. Gallant Girl 15093 by Revival 7236.
 519 II. (£10.)—W. W. RYCROFT, Drake Hill Hackney Stud, Bingley, for Angram Astonishment 10930, dark chestnut, bred by Mrs. Fletcher, Angram, Yorks; s. St. Thomas 7261, d. Angram Sunflower 17966 by Ganyমেদে 3076.
 513 III. (£5.)—T. B. COLMAN, Bridgham, Thetford, for Bridgham Sportsman, chestnut; s. Copper King 7764, d. Autumn 15585 by Tribute 5853.
 520 R. N. & H. C.—H. V. SHERINGHAM, South Creake, Fakenham, for Creake Victor.

Class 59.—Hackney Fillies, foaled in 1910. [7 entries, none absent.]

- 527 I. (£20.)—W. BURNELL TUBBS, The Paddocks, Mill Hill, for Apex, bay; s. Leopard 9783, d. Lighthouse 15977 by Forest King 5621.
 522 II. (£10.)—ROBERT BAXTER, Primrose Villa, Walsoken, Wisbech, for Ionius, chestnut; s. Polonius 4931, d. Walsoken Pride 16308 by Lord Bardolph 412.
 526 III. (£5.)—SIR WALTER GILBEY, Bt., Elsenham Hall, Essex, for Bouncey Girl, chestnut roan; s. Antonius 10559, d. Gallant Girl 15093 by Revival 7236.
 524 R. N. & H. C.—HENRY B. BRANDT, Capenor, Nutfield, for Bellona.

Class 60.—Hackney Fillies, foaled in 1909. [7 entries, 1 absent.]

- 535 I. (£20, & R. N. for Champion.²)—W. BURNELL TUBBS, The Paddocks, Mill Hill, for The Whip 21707, chestnut; s. Leopard 9783, d. Terrington Leah 18665 by Goldfinder 6th 1791.
 529 II. (£10.)—HENRY B. BRANDT, Capenor, Nutfield, Surrey, for Belle Mère 21237, dark chestnut, bred by W. Burdett-Coutts, M.P., Brookfield, Highgate; s. Polonius 4931, d. Bellissima 12444 by Beau Lyons 2357.
 531 III. (£5.)—WILLIAM MCALLISTER, Hackney Stud, Inverness, for Abania of Inverness 21201, chestnut; s. Royal Danegelt 5785, d. Inverness Duchess of Connaught 15192 by Garton Duke of Connaught 3009.
 532 R. N. & H. C.—SIR EDWARD MANN, Bt., Thelveton Hall, Scolo, for Thelveton Rosette.

Class 61.—Hackney Fillies, foaled in 1908. [9 entries, none absent.]

- 543 I. (£20, & Champion.¹)—W. W. RYCROFT, Drake Hill Hackney Stud, Bingley, for Beckingham Zarinia 20518, chestnut, bred by R. Surfleet, The Limes, Beckingham, Gainsborough; s. Beckingham Flashlight 9118, d. Miss Helmsley 12953 by Danebury 4724.
 541 II. (£10.)—MRS. FLETCHER & SONS, The Grange, Angram, York, for Angram Queen Patricia 20484, chestnut; s. Garton Duke of Connaught 3009, d. Angram Princess Patricia 17097 by Challenger 3013.
 539 III. (£5.)—H. O. CALLABY, Hunstanton, Norfolk, for Hunston Queen 20767, chestnut; s. Royal Danegelt 5785, d. Dashing Princess 18563 by Baden Powell 7346.
 537 R. N. & H. C.—WALTER BRIGGS, Linden Hall, Borwick, Carnforth, for Albin Ophelia.

Class 62.—Hackney Mares, with Foals at foot, over 14, and not exceeding 15·2 hands. [7 entries, 1 absent.]

- 549 I. (£20.)—H. HINRICHSSEN, Henshall Hall, Congleton, for Hopwood Clematis 15876, dark chestnut, foaled in 1902, bred by F. I. Batchelor, Hopwood, Alvechurch; s. Rosador 4964, d. Muriel 2340 by Cadet 1251. [Foal by Leopard 9783.]
 545 II. (£10.)—HENRY B. BRANDT, Capenor, Nutfield, Surrey, for Leopardess 18360, dark chestnut, foaled in 1903, bred by W. Burdett-Coutts, M.P., Brookfield Stud, Highgate; s. Leopard 8218, d. Marguerite 12080 by Candidate 820. [Foal by Royal Danegelt 5785.]
 551 III. (£5.)—H. V. SHERINGHAM, South Creake, Fakenham, for Creake Sylvia 15017, chestnut, foaled in 1901; s. Challenger 3013, d. Maidie 11241 by Silvio 4983. [Foal by Antonius 10559.]
 546 R. N. & H. C.—WALTER BRIGGS, Linden Hall, Borwick, Carnforth, for Angram Rosette.

Class 63.—Hackney Mares, with Foals at foot, over 15·2 hands.

[4 entries, 1 absent.]

- 552 I. (£20.)—H. O. CALLABY, Hunstanton, Norfolk, for Terrington Blue Stocking 18651, chestnut, foaled in 1905, bred by Sir Gilbert Greenall, Bt., Winton Hall, Warrington; s. Caxton 2398, d. Terrington Newnham 18256 by Goldfinder 6th 1791. [Foal by Leopard 9783.]

¹ Champion Gold Medal given by the Hackney Horse Society for the best Stallion in Classes 58-59.

² Champion Gold Medal given by the Hackney Horse Society for the best Mare or Filly in Classes 59-63.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 554 II. (£10.)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for Polly Olga 18190, chestnut foaled in 1905, bred by E. Hodgson, The Hollows, Bridlington; s. Rosador 4961 d. Lady Superior 12033 by Garton Duke of Connaught 3009 [Foal by Antonius 10559.]
- 553 III. (£5.)—JOHN CHIVERS, Wychfield, Cambridge, for Maudora 18010, bay, foaled in 1902, bred by A. A. Haley, Malton, Yorks.; s. Rosador 4961, d. Lady Maude 4150 by Pioneer 1088. [Foal by Antonius 10559.]

Class 64.—Hackney Foals, the produce of Mares in Classes 62 or 63.

[9 entries, none absent.]

- 564 I. (£10.)—H. V. SHERINGHAM, South Creake, Fakenham, for chestnut filly, foaled April 1; s. Antonius 10559, d. Creake Sylvia 15017 by Challenger 3013.
- 358 II. (£5.)—H. C. CALLABY, Hunstanton, Norfolk, for chestnut colt, foaled April 3, bred by G. A. Cobb, Garston, Wafford; s. Leopard 9783, d. Terrington Blue Stocking 18651 by Caxton 2398.
- 361 III. (£3.)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for chestnut colt, foaled March 23; s. Antonius 10559, d. Terrington Purity 13079 by Goldfinder 8th 1791.
- 550 R. N. & H. C.—EDMUND C. CHAPMAN, Stud Farm, Alothorpe, Fakenham.

Hackney Ponies.¹

Class 65.—Hackney Pony Stallions, foaled in or before 1908, not exceeding 14 hands. [11 entries, 2 absent.]

- 574 I. (£15.)—D. R. THOMAS, Tanyralit Pony Stud, Talybont, for Tanyralit Fireboy 11226, bay, foaled 1903, bred by O. T. Price, Lyndhurst, Brockenhurst; s. Fire Boy 7440, d. Lyndhurst Paula 16780 by Tissington Horace 7653.
- 565 II. (£10.)—JOSHUA BALL, Southworth Hall, Warrington, for Southwell Swell 11210, bay, foaled 1907, bred by E. W. Sankey, Croft, Lancs.; s. Finnerfields Horace 7952, d. Tylston Maid 10278 by Berkeley Model 3663.
- 569 III. (£5.)—JAMES HALES, Rougham Pony Stud, Bury St. Edmunds, for Son of Fire, 9023, bay, foaled 1903, bred by Alfred S. Day, Berkeley Stud, Crewe; s. Fire Boy 7440 d. Berkeley Dagmar 13267 by Berkeley Model 3663.
- 575 IV. (£4.)—WILLIAM WAINWRIGHT, The Pony Stud, Talke, Stoke-on-Trent, for Talke Wildfire 10825, bay, foaled in 1907; s. Fire Boy 7440, d. Berkeley Lily 14137 by Berkeley Model 3663.

Class 66.—Hackney Pony Colts, Fillies, or Geldings, foaled in 1909, not exceeding 13·2 hands. [8 entries, 1 absent.]

- 583 I. (£15.)—ROBERT WHITWORTH, Lonsborough Stud, Market Weighton, for Melbourne Fame 11509, bay colt, bred by W. Chiff, Melbourne Hall, near York; s. Royal Success 8095, d. Worley Bell 14373 by Sir Horace 5492.
- 579 II. (£10.)—H. LE MARCHANT, Burlington Lodge, Streatham Common, London, S.W., for Chocolate Soldier, brown colt; s. Torchfire 9472, d. Sylvia Whitney by Mathias 6473.
- 578 III. (£5.)—JOHN JONES & SONS, Dinarth Hall Pony Stud, Colwyn Bay, for Little Briton, dark brown colt, bred by Sir Gilbert Greenall, BT., C.V.O., Walton Hall, Warrington; s. Warrener 8025, d. Tissington Amy 18684 by Sir Horace 5402.
- 582 R. N. & H. C.—GEORGE E. WAUD, Ferniehurst, Baldon, Yorks, for Ferniehurst Fusilier.

Class 67.—Hackney Pony Fillies or Geldings, foaled in 1908, not exceeding 13·3 hands. [4 entries.]

- 585 I. (£15.)—J. H. TATE, Hackney Stud, Grimshy, for Glenavon Fireworks 11035, bay gelding, bred by W. Wainwright & Sons, Talke, Stoke-on-Trent; s. Fire Boy 7440, d. Berkeley Lily 14137 by Berkeley Model 3663.
- 586 II. (£10.)—D. R. THOMAS, Tanyralit Pony Stud, Talybont, for Tanyralit Merry Madge 21033, bay filly, bred by O. T. Price, Lyndhurst, Brockenhurst; s. Fire Boy 7440, d. Merry Polly 3250 by Merry Sunshine 1523.
- 584 III. (£5.)—JAMES HALES, Rougham Pony Stud, Bury St. Edmunds, for Rougham Tit Bits, bay filly; s. Son of Fire 9023, d. Only a Midget No. 1181 F.S. by Cronton Denmark 2918.
- 587 R. N. & H. C.—R. H. B. WILSON, Old Stud Farm, Scole, for Willows Iris.

Class 68.—Hackney Pony Mares, with Foals at foot, not exceeding 14 hands. [5 entries, none absent.]

- 590 I. (£15.)—D. R. THOMAS, Tanyralit Pony Stud, Talybont, for Lyndhurst Paula 16780, bay, foaled 1903, bred by Sir Gilbert Greenall, BT., C.V.O., Walton Hall, Warrington; s. Tissington Horace 7653, d. Merry Polly by Merry Sunshine 1523. [Foal by Tanyralit Fireboy 11229.]

¹ £75 towards the Prizes for Hackneys and Hackney Ponies were given by the Hackney Horse Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 588 II. (£10.)—JAMES HALES, Rougham Pony Stud, Bury St. Edmunds, for *Sedgemere Berry Midget* 16181, bay, foaled 1902, bred by W. Hollins, Berry Hill, Mansfield; s. *Prospector* 6514, d. *Grovehill Midget* 13530 by *Matchless* of Langton 5722. [Foal by Son of Fire 90231.]
- 591 III. (£5.)—D. R. THOMAS, for *Tissington Gimlet* 15485, bay, foaled 1901, bred by Sir Gilbert Greenall, Bt., C.V.O., Walton Hall, Warrington; s. Sir Horace 5402, d. Little Georgina 11214 by *Snorter* 4995. [Foal by Tanyrall Fireboy 11220.]
- 592 R. N. & H. C.—WILLIAM WAINWRIGHT, Talks, Stoke-on-Trent, for Talks Fire Queen.

Driving Classes.¹

Class 69.—Harness Mares or Geldings, Novices, not exceeding 14 hands.

[11 entries, none absent.]

- 590 I. (£15.)—WILLIAM FOSTER, Mel-Valley, Moseley, Worcs., for Mel-Valley's Fume, bay gelding, foaled 1906, bred by Sir Gilbert Greenall, Bt., Walton Hall, Warrington; s. *Magpie's Danegelt* 7183, d. *Tissington Kate* 14010 by Sir Horace 5402.
- 595 II. (£10.)—WILLIAM FOSTER, for Mel-Valley's Flare, bay gelding, foaled 1906, bred by W. E. Inman, Huddersfield; s. Westfield Polonus 8988, d. *Tissington Joyful* 17006 by Sir Gibbie 1812.
- 599 III. (£5.)—FRANK POPHAM, Brettenham Manor, Thetford, for *Shirley Gem* 18307, chestnut mare, foaled 1905, bred by J. Jones, Whitgate Stud, Wrexham; s. *His Majesty* 2513, d. *Whitgate Charmer* 10337 by *Cassius* 2387.
- 585 IV. (£5.)—J. H. TATE, for *Glenavon Fireworks*. (See Class 67.)
- 593 R. N. & H. C.—THOMAS CATLOW, Higher Trap Stud, Padham, for Little Light-heart.

Class 70.—Harness Mares or Geldings, Novices, over 14 and not exceeding 15 hands. [27 entries, 3 absent.]

- 609 I. (£15, & R. N. for Champion.²)—WILLIAM FOSTER, Mel-Valley, Moseley, Worcs., for Mel-Valley's King George, bay gelding, foaled 1906, bred by J. Miller, Hensle Road, Hull; s. *Matchless King* 8236, d. *Lady Christina* by *Forest King* 3021.
- 612 II. (£10.)—MRS. M. HIGNETT, Offley Ley, Crewe, for *Newcote Pearl*, bay mare, foaled 1904; s. *Royal Denmark* 8824, d. *Kitty* by *Monkshead* 8250.
- 602 III. (£5.)—HENRY B. BRANDT, Capenor, Nutfield, Surrey, for *Capenor Marathon*, black gelding, foaled 1905, bred by E. Scott, Thornholme, Carlisle; s. *Mathias* 6473.
- 620 IV. (£5.)—MISS ELLA S. ROSS, Beechfield, Sala, Cheshire, for *Grand Vim* (late *Master Mathias*) 10319, black gelding, foaled 1906, bred by R. C. Marhall, Burnt-shields, Kilbarchan; s. *Mathias* 6473, d. *Rosetta* 8426 by *Lord Derby* 2nd 417.
- 618 R. N. & H. C.—P. ROBINSON, Cleevethorpe, Sandal, Wakefield, for *Pinderfields Royal*.

Class 71.—Harness Mares or Geldings, Novices, over 15 hands.

[19 entries, 2 absent.]

- 631 I. (£15, & Champion.²)—GORDON HACKNEY STUD, Loanend, Inverness, N.B., for *Eyedel-Aire*, brown mare, foaled 1907, bred by G. MacGill, Hollinbrook House, Littleborough; s. *Mathias* 6473, d. *Hollin Flashlight* 10700 by *Noxbury Lightning* 7563.
- 640 II. (£10.)—PHILIP SMITH, Haddon House, Ashton-on-Mersey, for *Northern Glory* 20134, brown mare, foaled 1907, bred by A. Morton, Gowan Bank, Darvel; s. *Mathias* 6473, d. *Bog Myrtle* 11848 by *Garton Duke* of Connaught 3009.
- 630 III. (£5.)—MISS ELLA S. ROSS, Beechfield, Sala, Cheshire, for *Grand Viscount*, black gelding, foaled 1906, bred by Gavin Ross, Dykehead, Chappeltown; s. *Mathias* 6473, d. *Maid of Honour* 1245 by *Confidence* 163.
- 628 IV. (£5.)—THOMAS CATLOW, Higher Trap Stud, Padham, for *Higher Trap Ethel*, chestnut mare, foaled 1907, bred by the Haleswood Stud Co., Liverpool; s. *Astonishment* 2nd 3422, d. *Ethelreda* 3740 by *Golden Star* 989.
- 630 R. N. & H. C.—MRS. FLETCHER & SONS, The Grange, Angram, York, for *Lady Polonus*.

Class 72.—Harness Mares or Geldings, not exceeding 14 hands.

[11 entries, none absent.]

- 645 I. (£15.)—WILLIAM FOSTER, Mel-Valley, Moseley, Worcs., for Mel-Valley's Flame, bay gelding, foaled 1906, bred by Walter Cliff, Melbourne Hall, York; s. *Royal Success* 8965, d. *Wortley Bell* 14873 by Sir Horace 5402.
- 595 II. (£10.)—WILLIAM FOSTER, for Mel-Valley's Flare. (See Class 69.)
- 599 III. (£5.)—FRANK POPHAM, for *Shirley Gem*. (See Class 69.)

¹ Prizes given by the Norwich Local Committee.

² Gold Challenge Cup, given by gentlemen interested in Harness Horses for the best animal in the Novice Classes 69-71.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 644 IV. (£5.)—LEO VANDEN BERGH, Rotterdam, for Prestbury Reform, bay gelding, foaled in 1906.
598 E. N. & H. C.—JAMES HALES, Rougham Pony Stud, Bury St Edmunds, for Berkeley Dryad.

Class 73.—Harness Mares or Geldings, over 14 and not exceeding 15 hands. [21 entries, 2 absent.]

- 650 I. (£15.)—PHILIP SMITH, Haddon House, Ashton-on-Mersey, for Queen of Ayr 20178 bay mare, foaled 1903, bred by Mrs. Walker, Limesfield, West Calder; s. Mathias 6473, d. Dearest 2nd 10837 by Lord Rackell 5238.
649 II. (£10.)—MRS. FREDERICK E. COLMAN, Nork Park, Epsom Downs, for Fireaway (late Fylde Fireway 9729), chestnut gelding, foaled 1905, bred by T. B. Sykos, Breck House, Poulton-le-Fylde; s. Polonius 4931, d. Zaizan 9677 by Astonishment 2nd 3422.
609 III. (£5.)—WILLIAM FOSTER, for Mel-Valley's King George. (See Class 70.)
612 IV. (£5.)—MRS. M. HIGNETT, for Newcote Pearl. (See Class 70.)
616 E. N. & H. C.—DR. ALEX. BOWIE, 4 Hertford Street, London, W., for Princess Sheila.

Class 74.—Harness Mares or Geldings, over 15 and not exceeding 15.2 hands. [17 entries, 1 absent.]

- 653 I. (£15, E. N. for Champion,¹ & E. N. for Medal,²)—NIGEL C. COLMAN, Nork Park, Epsom Downs, for Authority 7690, bay gelding, foaled 1900, bred by S. R. Tennant, Great Kendale, Driffield; s. Ganymede 2076, d. Family Pride 2726 by Lord Derby 2nd 417.
631 II. (£10.)—GORDON HACKNEY STUD, for Rey-del-Aire (see Class 71).
657 III. (£5.)—PHILIP SMITH, Haddon House, Ashton-on-Mersey, for Haddon Marphil, (late Wolds Laertes) 9987, chestnut gelding, foaled 1904, bred by J. J. Kempley, Market Weighton; s. Polonius 4931, d. Lady Whinnmoor 13850 by Edemynag 5889.
658 IV. (£5.)—MISS ELLA S. ROSS, Beechfield, Sale, Cheshire, for Grand Vulcan, black gelding, foaled 1902, bred by R. C. Marshall, Burntshields, Kilbarchan; s. Mathias 6473, d. Rosetta 8426 by Lord Derby 2nd 417.
626 E. N. & H. C.—ROBERT BAXTER, Primrose Villa, Walsoken, for Walsoken Pride.

Class 75.—Harness Mares or Geldings, over 15.2 hands. [14 entries, 1 absent.]

- 663 I. (£15, Champion,¹ & Medal,²)—H. LE MARCHANT, Burlington Lodge, Streatham Common, London, S.W., for Gaythorn, chestnut gelding, foaled 1905, bred by J. Prentice, Uddington; s. Mathias 6473, d. Sweet Lips 15461, by North Star 1317.
641 II. (£10.)—PAUL HOFFMANN, 4 Cardigan Mansions, Richmond Hill, Surrey, for Riot, dark chestnut gelding, foaled 1903, bred by W. Burdett-Coutts, M.P., Brookfield Stud, Highgate; s. Polonius 4931, d. Emeute by Candidate 920.
668 III. (£5.)—MISS DORA SOHINTZ, Childwall Hall, Liverpool, for Morocco, chestnut gelding, foaled 1900, bred by G. N. Stephenson, Goodmanham, Market Weighton; s. Revival 7263, d. Mayflower 765 by Lord Derby 2nd 1117.
667 IV. (£5.)—MISS DORA SOHINTZ, for Catalina 17320, chestnut mare, foaled 1902, bred by W. Burdett-Coutts, M.P., Brookfield Stud, Highgate; s. Polonius 4931, d. Cuckoo Bright by Last Fashion 4943.
645 E. N. & H. C.—BRETHERAM W. MILLS, Redhill Farm, Edgware, for Redhill King.

Class 76.—Pairs of Harness Mares or Geldings, not exceeding 15 hands, to be driven in Double Harness. [7 entries, 1 absent.]

- 595 & 645 I. (£15, & E. N. for Champion,³)—WILLIAM FOSTER, for Mel-Valley's Flare (see Class 69) and Mel-Valley's Flame (see Class 72).
650 & 670 II. (£10.)—PHILIP SMITH, for Queen of Ayr (see Class 73) and Melbourne Princess 19347, bay mare, foaled 1900, bred by W. Cliff, Melbourne Hall, Yorks; s. Merry Wildfire 9342, d. Melbourne Duchess 1571 by Garton Duke of Connaught 3009.
647 & 671 III. (£5.)—EDWARD H. BROWN, Highwood, Roehampton, Surrey, for Southgate Polonius, chestnut gelding, foaled 1904, bred by R. W. Jay, Monk Frith, Southgate; s. Polonius 4931, d. Princess May 12230 by Field Marshal 2936, and Connaught King, chestnut gelding, foaled 1904, bred by R. P. Evans, Woodhatch, Reigate.
620 & 675 IV. (£5.)—MISS ELLA S. ROSS, for Grand Vim (see Class 70) and Grand Vallur, black gelding, foaled 1906, bred by W. J. Tatam, The Court, St. Fagan's, Cardiff; s. Ruby 1342, d. Mel-Valley Princess 12223 by Recruit 1834.

¹ Gold Challenge Cup, given by gentlemen interested in Harness Horses for the best animal in Classes 72-75.

² Gold Medal, given by the Hackney Horse Society for the best Mare or Gelding in Classes 69-75, the produce of a registered Hackney Stallion.

³ The "Viking" Gold Challenge Cup, given by a Member of the R.A.S.E. for the best Pair in Classes 76 and 77.

Award of Live Stock Prizes at Norwich, 1911. lxiii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 77.—*Pairs of Harness Mares or Geldings, exceeding 15 hands, to be driven in Double Harness.* [8 entries, 1 absent.]

- 667 & 680 I. (£15, & Champion.¹)—MISS DORA SCHINTZ, for Catalina (see Class 75); and Woodhatch Ruth 20883, chestnut mare foaled 1907, bred by R. P. Evans, Woodhatch House, Reigate; s. Evanthus 8463, d. Terrington Ruth 10988 by Lord Drewton 2nd 6817.
- 636 & 656 II. (£10.)—MISS ELLA S. ROSS, for Grand Viscount (see Class 71); and Grand Vulcan (see Class 74).
- 666 & 679 III. (£5.)—MISS ELLA S. ROSS, for Grand Vizier, black gelding, foaled 1902, bred by H. Whittick, Newland, Hull; s. Gentleman John 3624, d. Fairy Queen 6643 by Curfew 1755; and Rowton Vitalba, black gelding, foaled 1897, bred by J. W. Macfie, Rowton Hall, Chester; s. Rowton Blackthorn 5778, d. Rowton Violet 7366 by Contentment 1268.
- 638 & 670 IV. (£5.)—T. W. SIMPSON, Greenfield House, Laleham-on-Thames, for Coronet, chestnut gelding, foaled 1906, bred by H. Moore, Burn Butts, Oranswick, Hull; s. Garton Duke of Connaught 3009, d. B. B. Snowdrift 12435 by Field Marshal 2986; and Argo 10664, chestnut gelding, foaled 1907, bred by W. Burdett-Coutts, M.P., Brookfield Stud, Highgate; s. Polonius 4931, d. Fragility 10940 by Agility 2799.

Class 78.—*Pairs of Harness Mares or Geldings, not exceeding 15 hands, to be driven Tandem.* [7 entries, 1 absent.]

- 660 & 676 I. (£15, & Champion.²)—PHILIP SMITH, for Queen of Ayr (see Class 73); and Melbourne Princess (see Class 76).
- 620 & 675 II. (£10.)—MISS ELLA S. ROSS, for Grand Vim (see Class 70); and Grand Valleru (see Class 78).
- 647 & 671 III. (£5.)—EDWARD H. BROWN, for Southgate Polonius and Connaught King (see Class 76).

Class 79.—*Pairs of Harness Mares or Geldings, over 15 hands, to be driven Tandem.* [6 entries, none absent.]

- 667 & 680 I. (£15, & R. N. for Champion.³)—MISS DORA SCHINTZ, for Catalina (see Class 75); and Woodhatch Ruth (see Class 77).
- 653 & 655 II. (£10.)—NIGEL C. COLMAN, for Authority (see Class 74); and Cristolia 17233, bay mare, foaled 1904, bred by R. P. Evans, Woodhatch House, Reigate; s. Polonius 4931, d. Woodhatch Cristobelle 16372 by Ganymede 2078.
- 636 & 656 III. (£5.)—MISS ELLA S. ROSS, for Grand Viscount (see Class 71); and Grand Vulcan (see Class 74).

Four-in-hand Teams.

Class 80.—*Mares or Geldings.* [6 entries, 3 absent.]

- A I. (£20, & Champion.³)—EDWARD H. BROWN, Highwood, Roehampton.
- O II. (£15.)—MISS ELLA S. ROSS, Beechfield, Sale, Cheshire.
- F III. (£10.)—ALFRED G. VANDERBILT, Gloucester House, Park Lane, London, W.

Shetland Ponies.

Class 81.—*Shetland Pony Stallions, foaled in or before 1908, not exceeding 10½ hands.* [9 entries, 1 absent.]

- 689 I. (£10, & Champion.⁴)—WILLIAM MUNGALL, Transy, Dunfermline, for Silverton of Transy 518, black, foaled 1906; s. Seaweed 333, d. Silver Queen 1187 by Oman 33.
- 684 II. (£5, & R. N. for Champion.⁴)—THE LADIES E. & D. HOPE, Great Hollenden, Underriver, Sevenoaks, for Thoreau 392, black, foaled 1903; s. Odin 32, d. Thora 213 by Odin 32.
- 685 III. (£3.)—MRS. PHILIP HUNLOKE, Bucknell Manor, Bicester, for Fabian, brown, foaled 1907, bred by the Ladies E. & D. Hope, Great Hollenden, Underriver; s. Oman 33, d. Freesia 1601 by Bonaparte 168.
- 690 R. N. & H. C.—R. C. PHILLIMORE, Battler's Green, Watford, for Bismarck.

Class 82.—*Shetland Pony Mares, with Foals at foot, not exceeding 10½ hands.* [7 entries, 1 absent.]

- 695 I. (£10.)—THE LADIES E. & D. HOPE, Great Hollenden, Underriver, Sevenoaks, for Belle of the Ball 2831, dark brown, foaled 1904; s. Oman 33, d. Bretta 811 by Odin 32. [Foal by Thoreau 392.]

¹ The "Viking" Gold Challenge Cup, given by a Member of the R.A.S.E. for the best pair in Classes 76 and 77.

² The "Venture" Gold Challenge Cup, given by a Member of the R.A.S.E. for the best Tandem in Classes 78 and 79.

³ Gold Challenge Cup given by a Member of the R.A.S.E. interested in Coaching, for the best Team in Class 80.

⁴ Champion Silver Medal given by the Shetland Pony Stud Book Society for the best Animal in Classes 81 and 82.

lxiv Award of Live Stock Prizes at Norwich, 1911.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 696 II. (£5.)—WILLIAM MUNGALL, Transy, Dunfermline, for *Bramhope Veno* (vol. 18 p. 100), black, foaled 1907, bred by Mrs E. Fawcett, Old Bramhope, Leeds; s. Bonnaparte 168, d. *Bramhope Venty* 2154 by Ramoth 247. [Foal by Kirk 446.]
 698 III. (£3.)—WILLIAM MUNGALL, for *Stella* 1892, black, foaled 1899, bred by the Marquis of Londonderry, K.G., Seaham Hall; s. Thor 83, d. *Silver Queen* 1197 by Oman 33. [Foal by Seaweed 333.]
 699 R. N. & H. C.—MRS. MABEL CUTHEBERT, Brook Lodge, Weedon, for *Firefly*.

Welsh Ponies.¹

Class 83.—Welsh Pony Stallions, foaled in or before 1908, not exceeding 12 hands. [5 entries, none absent.]

- 699 I. (£10.)—SIR WALTER GILBEY, BT., Elsenham Hall, Essex, for *Shooting Star* 73, dark iron grey, foaled 1901, bred by S. M. Wilmot, The Chalet, Alveston; s. Dyoll Starlight 4, d. *Alveston Belle* 572 by Cymro.
 700 II. (£5. & Champion.² & 3.)—MRS. H. D. GREENE, Grove, Craven Arms, for *Grove Ballistite* 200, grey, foaled 1903, bred by H. M. Lloyd, Deliryn, Llanwrda; s. Dyoll Starlight 4, d. Dyoll Bala Gal 65.
 703 III. (£3.)—EVAN JONES, Manoravan, Llandilo, for *My Brother*, bay, foaled 1908 s. Dyoll Starlight 4, d. Myfanwy 356.
 702 R. N. & H. C.—MRS. PHILIP HUNLOKE, Bucknell Manor, Bicester, for *Coronation Starlight*.

Class 84.—Welsh Pony Mares, with Foals at foot, not exceeding 12 hands. [4 entries.]

- 707 I. (£10. & Champion.⁴)—JOHN LLOYD MORGAN, Rhiwfelen, Abergwili, for *Lady Starlight* 2047, grey, foaled 1903; s. Dyoll Starlight 4, d. *Lady White* 134. [Foal by Dyoll Starlight 4.]
 705 II. (£5. and R. N. for Champion.⁴)—JOHN JONES & SONS, Dinarth Hall Pony Stud, Colwyn Bay, for *Mountain Lass* 1234, red roan, foaled 1899, bred by Dr Harri, Abergystwyth; s. *Wild Wag of Wales* d. *Tregaron Bes.* [Foal by Little Fire 10735.]
 708 III. (£3.)—T. B. LEWIS, Bronallt, Llanwrtyd Wells, for *Roanline* 1704, roan, foaled 1903, bred by Miss Thomas, Llwynmadoc, Breconshire; s. *Cock Robin* 2nd 41, d. *Kirby*. [Foal by Ap Llewllyd.]
 704 R. N. & H. C.—MRS. H. D. GREENE, Grove, Craven Arms, for *Grove Fanlight*.

Class 85.—Welsh Pony Mares or Geldings, to be ridden, not exceeding 13.2 hands. [2 entries.]

- 708 I. (£10.)—MRS. PHILIP HUNLOKE, Bucknell Manor, Bicester, for *Bantam*, bay mare, foaled 1905.
 709 II. (£5.)—ROBERT WHITWORTH, Lonsborough Stud, Market Weighton, for *Peter*, roan gelding, foaled 1907.

JUMPING COMPETITIONS.⁵

Class A.—Mares or Geldings. [27 entries.]

- 16 I. (£25.)—SAMUEL PHELPS, Churcham, Gloucester, for *Laddie*.
 9 II. (£10.)—F. V. GRANGE, Alvaston, Nantwich, for *Rufus*.
 8 III. (£5.)—T. & W. SINGER, High House, Corley, Warrminster, for *Springbok*.
 18 IV. (£5.)—F. W. FOSTER, Marsh Farm, Etwell, Derby, for *General*.
 25 V. (£5.)—F. W. FOSTER, for *Paddy*.

Class B.—Mares or Geldings. [23 entries.]

- 1 I. (£20.)—F. W. FOSTER, Marsh Farm, Etwell, Derby, for *Paddy*.
 17 II. (£10.)—T. & W. SINGER, High House, Corley, Warrminster, for *Compton Bassett*.
 7 III. (£5.)—F. V. GRANGE, Alvaston, Nantwich, for *Rufus*.
 13 IV. (£5.)—HARRY BEEBY, Manor House Stables, Melton Mowbray, for *Mr. Porter*.
 11 V. (£5.)—T. E. WHITTINGHAM, Byrkley Street Stables, Burton-on-Trent, for *Ormond Boy*.

¹ £18 towards these Prizes were given through the Welsh Pony and Cob Society.

² Silver Medal given by the Welsh Pony and Cob Society for the best Stallion in Class 83.

³ No 700 has succeeded to the Championship owing to No. 699 having gained a Medal earlier in the year, thereby becoming ineligible.

⁴ Silver Medal given by the Welsh Pony and Cob Society for the best Mare in Class 84.

⁵ Prizes given by the Norwich Local Committee.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class C.—Mares or Geldings. [15 entries.]

- 12 I. (£15.)—F. W. FOSTER, Marsh Farm, Etwell, Derby, for General.
- 6 II. (£10.)—T. & W. SINGER, High House, Corsley, Warminster, for Compton Bassett.
- 11 III. (£5.)—F. V. GRANGE, Alvaston, Nantwich, for Rufus.
- 7 IV. (£5.)—T. & H. WARD, Pinchinthorpe, Great Ayton, for Fisherman.
- 1 V. (£5.)—E. G. EASTERBY, Mount Pleasant Escrick, York, for Piper.

Class D.—Champion Class. Mares or Geldings. [12 entries.]

- 1 I. (£25.)—F. W. FOSTER, Marsh Farm, Etwell, Derby, for Paddy.
- 2 II. (£15.)—J. H. DUNN, Coombe Cottage, Kingston Hill, for Cousin Jack.
- 3 Equal Prize (HARRY BEEBY, Manor House Stables, Melton Mowbray, for Mr. Porter.
- 7) of £7 10s. 1 F. V. GRANGE, Alvaston, Nantwich, for Rufus.
- 9 V. (£5.)—T. & W. SINGER, High House, Corsley, Warminster, for Springbok.

CATTLE.

Shorthorns.

Class 86.—Shorthorn Bulls, calved in 1906, 1907, or 1908.

[15 entries, 1 absent.]

- 721 I. (£10, & Champion.¹)—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Worksop, for Village Diamond 100931, roan, born Jan. 4, 1907, bred by W. T. Garne & Son, Aldsworth, Northleach; s. Village Beau 87631, d. Another Jewel by Bapton Crown 78288.
- 723 II. (£6.)—VISCOUNT TREDEGAR, Tredegar Park, Newport, Mon., for Pretender 103543, roan, born Jan. 19, 1908, bred by W. T. Garne & Son, Aldsworth, Northleach; s. Village Coronet 97548, d. Patient Lass by Aldsworth Pioneer 82701.
- 719 III. (£4.)—F. MILLER, La Belen, Clifton Road, Birkenhead, for Good Friday 90003, roan, born March 29, 1907, bred by J. Hope, Ireby Hall, Wigton; s. Morning Sun 89381, d. Tulip 37th by Ostorus 79512.
- 714 IV. (£3.)—GEORGE HARRISON, Gainford Hall, Darlington, for Prince Olaf 2nd 103410, roan, born March 5, 1908, bred by R. W. Bell, Windmill Farm, Coagh; s. Prince Olaf 86535, d. Broadhooks F. 3rd by Lord Roberts 83958.
- 712 V. (£3.)—SIR RICHARD COOPER, Bart., Shenstone Court, Lichfield, for Moon King 5th 103122, roan, born August 6, 1907, bred by Col. W. Gwynne Hughes, Glancothi, Nantgaredig; s. Moon King 2nd 82594, d. Cherry Ripe 2nd by Monograph 75104.
- 713 R. N. & H. C.—HENRY DUDDING, Riby Grove, Great Grimsby, for Allerston Nugget.

Class 87.—Shorthorn Bulls, calved on or between January 1, 1909, and March 31, 1909. [25 entries, 1 absent.]

- 729 I. (£10, & R. N. for Champion.¹)—C. E. GUNTHER, Tongswood, Hawkhurst, Kent, for Tongswood Bampton 107295, roan, born Jan. 19; s. Bapton Yeoman 85248, d. Strawberry Dame by Prince Benedict 86904.
- 740 II. (£6.)—JOHN H. MADEN, Rockcliffe House, Bacup, for Rockcliffe Scotchman 106812, roan, born Jan. 25; s. Rockcliffe Star 93134, d. Sherborne Fairy by Scottish Monarch 77828.
- 745 III. (£4.)—THE HON. CLAUD B. PORTMAN, Goldicote, Stratford-on-Avon, for Pride of Gainford 106540, roan, born Jan. 14, bred by George Harrison, Gainford Hall, Darlington; s. Pride of Tees 98474, d. Rosate Dawn by Good Morning 79004.
- 730 IV. (£3.)—JOHN HANDLEY, Green Head, Minthorpe, for Ankness Scotchman 2nd 107640, red and little white, born March 12, bred by John Waind, Ankness, Kirby Moorside; s. Gainford Scotchman 102301, d. Parlour Maid by Lifeguard 68908.
- 741 V. (£3.)—F. MILLER, La Belen, Clifton Road, Birkenhead, for Prospector 106618, red, born March 4, bred by C. H. Jolliffe, Newbus Grange, Darlington; s. Pride of Tees 98474, d. Golden Wreath 15th by Golden Arrow 83583.
- 737 R. N. & H. C.—P. AND G. HUGHES, Gresty, Crewe, for Earl Primrose.

Class 88.—Shorthorn Bulls, calved on or between April 1, 1909, and December 31, 1909. [32 entries, 6 absent.]

- 753 I. (£10.)—MRS. CHARLES H. DIXON, Gunthorpe, Oakham, for Gunthorpe Beau (vol. 56, p. 633), roan, born May 2; s. Village Beau 87631, d. Eastington Phantom 2nd by Wrestler 66582.
- 767 II. (£6.)—CHARLES A. HIRST, Crake Hall, West Heslerton, York, for Columbus 108258, roan, born May 3, bred by W. Anderson, Saphock, Old Meldrum; s. Proud Emblem 100999, d. Columbine 12th by Villager 80177.

¹ Champion Prize of £20 given by the Shorthorn Society for the best Bull in Classes 86-90 and 99.

² Prizes given by the Shorthorn Society.

lxvi *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 764 III. (£4.1.)—GEORGE HARRISON, Gainford Hall Darlington, for Fitz-Cembra, 105495 roan, born May 6, bred by the Rt Hon F Wiensch, Killacoon, Ballybrack; s. Orphan s Red Diamond 99874, d. Lucan White Thorn by Stephen Fitz-Lavender 73712.
- 777 IV. (£3.)—HENRY SELVIN, Burn Hall, Durham for Burnhall Marquis 101935, roan, born July 4, s. Royal Bounty 89907, d. Carnation 3rd by Marquis 84061.
- 759 V. (£3.)—JOHN GILL, Thorn Farm, Stainton, Penrith for Mayflower Prince 109361, red, born April 7, bred by John Young Tilbournes, Maryoultai, s. Sterling Character 97289, d. Mayflower 22nd by Sittytton Choice 84822.
- 779 R. N. & H. C.—CHARLES SPENCER, Holywell Manor, St Ives, for Hampton Velvet.

Class 89.—*Shorthorn Bulls, calved on or between January 1, 1910, and March 31, 1910. [27 entries, 4 absent.]*

- 802 I. (£10.1.)—DONALD MACLENNAN Radnor Hall, Elstree, for Beaufort Landmarker, roan, born Jan 15 bred by Lord Lovit, Beaufort Castle, Beaulieu, N.B., s. Village Rambler 100992 d. Lady Laura by Master Milcent 8040.
- 805 II. (£6.1.)—F MILLER, La Belen, Clifton Road, Birkenhead, for Man O'War roan, born Feb 1 bred by J C Toppin, Musgrave Hall, Skelton, Penrith, s. Bletchley Lord 80934 d. Mermaid (vol 56, p 1189), by British Volunteer 85448.
- 782 III. (£4.)—HIS MAJESTY THE KING Royal Farms Windsor, for Statesman roan, born Jan. 14 bred by His Majesty King Edward VII, s. Evander 95106, d. Zoe 9th (vol 55, p 438) by Royal Sanguhar 79839.
- 796 IV. (£3.)—CHARLES A. HIRST, Crake Hall, West Hedlerton, York, for Allerston Torriador, roan born Jan 9, s. Border Tower 90960, d. Lady Mary 11th (vol. 55, p 792) by Look-Ahead 67327.
- 795 V. (£3.)—GEORGE HARRISON, Gainford Hall, Darlington, for Trump Card, roan, born March 9 bred by Dr. R. M. Wilson, Tarty, Ellon, s. Ballechin Type 85212, d. Cluny Flora 96th (vol 56, p 1245) by Clan Macdonald 78597.
- 803 R. N. & H. C.—JOHN H. MADDEN, Rockcliffe House, Bacup, for Lord Canning

Class 90.—*Shorthorn Bulls, calved on or between April 1, 1910, and December 31, 1910. [42 entries, 5 absent.]*

- 838 I. (£10.1.)—LORD MIDDLETON, Birdsall House, Malton, for Birdsall Conqueror, roan, born April 12; s. Illustrious Count 95537, d. Birdsall Empress 4th (vol. 55, p 922) by Bradford 8th 82933.
- 818 II. (£6.1.)—THE EDGEOTE SHORTHORN CO., LTD, Edgecote, Banbury, for Edgecote Don, roan, born April 1; s. Bletchley King 98112, d. Choice Blossom (vol. 56, p. 662) by Lord Lyndoch 74900.
- 832 III. (£4.1.)—WILLIAM J. HOSKEN, Pulsack, Hayle, Cornwall, for Bartelver Hero, roan, born May 1, bred by W. James, Bartelver, Grampound Road; s. Janissary 5th 83778, d. Gwynne J. 5th (vol 55, p 333) by Jacobite 76910.
- 819 IV. (£3.)—THE EDGEOTE SHORTHORN CO., LTD, for Edgecote Hope, roan, born June 12; s. Bletchley King 98112, d. Golden Flower (vol 55, p. 1234) by Spicy Conqueror 90204.
- 812 V. (£3.)—CAPT. OLIVE BEHRENS, Swinton Grange, Malton, for Swinton Saint, roan, born April 10, s. Chiddingstoke Seal 101787, d. Langley Phantom 3rd (vol. 54, p 1307) by Village Jester 93745.
- 821 R. N. & H. C.—JOHN GILL, Thorn Farm, Stainton, Penrith, for Crown Jewel.

Class 91.—*Group Class, for the best collection of either three or four Shorthorn Bulls, bred by Exhibitor. Open to animals entered in Classes 86 to 90 and 99 only. [6 entries, 1 absent.]*

- 717 769, 770 I. (£15.)—SIR H. S. LEON, BT, Bletchley Park, Bucks, for Bletchley Silver, Bletchley Ensign, and Bletchley Knight.
- 728, 761, 762 II. (£10.1.)—SIR WALPOLE GREENWELL, BT, Marden Park, Woldingham, for Marden Baron, Marden Feldon, and Marden Royal.
- 747, 848, 847 R. N. & H. C.—J. M. STROCKLAND, Warren House, Brandsby, Easingwold, for Brandsby's Coming Star, Brandsby's Jolly Jilt, and Brandsby's Roscius.

Class 92.—*Shorthorn Cows (in-milk), calved in or before 1907. [8 entries, none absent.]*

- 857 I. (£10. & R. N. for Champion.2.)—F MILLER, La Belen, Clifton Road, Birkenhead, for Daisy's Queen (vol 56, p 918), white, born May 16, 1907 calved May 6, 1911, bred by J. O. Toppin, Musgrave Hall, Skelton, Penrith; s. Imperial Crown 92029, d. Daisy's Hope by Lord George 72876.
- 854 II. (£6.)—JOSEPH BARNES, Baurgh Syke, Wigton, for Bridekirk's May (vol. 55, p 478), red and white, born Sept. 2, 1904, calved Dec 16, 1910, s. Baron Bridekirk 33rd 85258 d. Golden May by Golden Hind 2nd 53782.

¹ Prizes given by the Shorthorn Society.

² Champion Prize of £20 given by the Shorthorn Society for the best Cow or Heifer in Classes 92-97 and 100-102.

Award of Live Stock Prizes at Norwich, 1911. lxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 858 III. (£4.)—WALTER M. SCOTT, Nether Swell Manor, Stow-on-the-Wold, for Gay Maid (vol. 56, p. 1110), roan, born April 17, 1905, calved May 29, 1911, bred by George Walker, Tillyreig Udney: s. Defender 88363, d. Gay Lady by Pride of Day 79597.
859 R. N. & H. C.—JOHN H. MADEN, Rockcliffe House, Bacup, for Bertha 9th.

Class 93.—*Shorthorn Heifers (in-milk), calved in 1908.* [10 entries, 3 absent.]

- 859 I. (£10.) & Champion.*—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield, for Waterloo Lady 36th (vol. 55, p. 599), roan, born April 26, calved June 5, 1911; s. Meteor 86631, d. Waterloo Lady 16th by Czarewitch 68438.
862 II. (£6.)—ALEX. T. GORDON, Loanhead, Insch, for Florrie (vol. 55, p. 727), roan, born May 17, calved Jan. 12, 1911; s. Royal Velvet 84555, d. Fanfare 6th by Wilcot 78101.
860 III. (£4.)—RICHARD CORNELIUS, Bankfields, Eastham, Cheshire, for Rosaline 10th (vol. 55, p. 672), roan, born April 4th, calved Jan. 29, 1911, bred by W. Duthie, Collynie, Tarnes; s. Achilles 93983, d. Lady Rosaline by Caledon Chief 74163.
861 IV. (£3.)—HENRY DUDDING, Riby Grove, Great Grimby, for Riby Gwynne 28th (vol. 55, p. 662), roan, born June 28, calved April 25, 1911; s. Strowan Kaiser 97346, d. Riby Gwynne 24th by Rosario 75471.
864 R. N. & H. C.—C. W. KELLOCK, Highfields, Audlem, for Little Mary.

Class 94.—*Shorthorn Heifers, calved on or between January 1, 1909, and March 31, 1909.* [6 entries, 2 absent.]

- 874 I. (£10.)—J. MCCLYMONT REID, Cleeve Grange, Bishop's Cleeve, Glos., for Lady Ann 22nd, roan, born March 5, bred by W. & J. W. Peterkin, Dungslass, Conon Bridge, N.B.; s. Jim Sides 99230, d. Lady Ann 15th (vol. 55, p. 1021) by Collynie Conqueror.
870 II. (£6.)—SIR WALPOLE GREENWELL, BT., Marden Park, Woldingham, Surrey, for Marden Lady Waterloo (vol. 55, p. 728), roan, born March 6; s. Ascott Constellation 85184, d. Lady Gladys Waterloo by Pitlivi Governor 79582.
869 III. (£4.)—W. T. GARNE & SON, Aldsworth, Northleach, for Village Lassie (vol. 56 p. 698), red, born Jan. 10; s. Village Beau 87631, d. Venetia by Royal Fame 87184.
873 R. N. & H. C.—C. W. KELLOCK, Highfields, Audlem, for Highfields Parsley.

Class 95.—*Shorthorn Heifers, calved on or between April 1, 1909, and December 31, 1909.* [17 entries, 1 absent.]

- 875 I. (£10.)—R. J. BALSTON, Bilsington Priory, Ashford, Kent, for Dewlap (vol. 56 p. 461), roan, born July 27; s. Tehidy Robin Hood 97420, d. Maydew by Rufus of Huntingdon 93308.
876 II. (£6.)—CAPT. OLIVE BEHRENS, Swinton Grange, Malton, for Abbey Farm Mary, roan, born July 24, bred by Messrs. Webster, Abbey Farm, Yedingham, York; s. Border Tower 90860, d. Allerston Mary 3rd (vol. 55, p. 791) by Brokenhurst 85458.
881 III. (£4.)—RICHARD CORNELIUS, Bankfields, Eastham, Cheshire, for Eastham Belle (vol. 56, p. 588), white, born April 7, bred by W. T. Garne & Son, Aldsworth, Northleach; s. Village Beau 87631, d. Aldsworth Phantom by Aldsworth Jasper.
883 IV. (£3.)—TRUSTEES OF THE LATE COL. GEORGE SMITH GRANT, Mimmore, Glenlivet, for Martha 5th, roan, born May 10, bred by J. Morrison, Pingsask, Fraserburgh; s. Golden Mascot 95330, d. Martha (vol. 54, p. 956) by Star of Destiny.
882 V. (£3.)—HENRY DUDDING, Riby Grove, Great Grimby, for Gainford Dickson, rich roan, born Oct. 15, bred by George Harrison, Gainford Hall, Darlington; s. Collynie Champion 93417, d. Tehidy Royal Dickson 4th (vol. 54, p. 503) by Shamrock.
885 R. N. & H. C.—CHARLES A. HIRST, Orake Hall, Heslerton, York, for Allerston Marigold 3rd.

Class 96.—*Shorthorn Heifers, calved on or between January 1, 1910, and March 31, 1910.* [21 entries, 2 absent.]

- 893 I. (£10.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Constance, roan, born Jan. 6, bred by His Majesty King Edward VII.; s. Festus 98821, d. Caroline 8th (vol. 56, p. 419) by Prince of Sanguhar 71231.
900 II. (£6.)—W. T. GARNE & SON, Aldsworth, Northleach, for Village Lass, white, born Feb. 23; s. Village Beau 87631, d. Patient Lass (vol. 55, p. 715) by Aldsworth Pioneer 82701.
899 III. (£4.)—W. T. GARNE & SON, for Village Countess, roan, born Jan. 8; s. Village Beau 87631, d. Venetia (vol. 56, p. 698) by Royal Fame 87184.
898 IV. (£3.)—HENRY DUDDING, Riby Grove, Great Grimby, for Royal Beauty, roan, born Feb. 12, bred by J. A. Preece, Drayton Home Farm, Thrapston; s. Royal Pippin 96936, d. Drayton Beauty (vol. 56, p. 1043) by Lydney Masterpiece 83998.
895 V. (£3.)—LORD RICHARD CAVENTISH, Holker Hall, Cark-in-Cartmel, for Holker Baroness Oxford 6th, roan, born Jan. 14; s. Gold Plate 91883, d. Lady Rosfield Oxford 6th (vol. 55, p. 578) by Balnakyle 65092.
901 R. N. & H. C.—JOHN GILL, Thorn Farm, Stainton, Penrith, for Lady Mayflower 2nd.

* Prizes given by the Shorthorn Society.

1 Champion Prize of £30 given by the Shorthorn Society for the best Cow or Heifer in Classes 92-97 and 100-102.

lxviii Award of Live Stock Prizes at Norwich, 1911.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 97.—Shorthorn Heifers, calved on or between April 1, 1910, and December 31, 1910. [16 entries, none absent.]

- 925 I. (£10.)—EARL MANVRS, Holme Pierrepont Nottingham, for *Pierrepont Blossom*, roan, born Sept 12; s *Notlaw Phoenix* 103227, d *Plum Blossom* 4th (vol. 53, p. 1132) by *Olderfleet* 89468.
 924 II. (£6.)—W J HOSKEN, Pulsack, Hayle, for *Hayle Golden Wreath*, red, born May 4; s *Barteliver Trump* 101453, d *Cornish Dawn* (vol. 56, p. 802) by *Hayle Court* 41683.
 926 III. (£4.)—THE DUKE OF NORTHUMBERLAND, KG, Alnwick Castle, for *Alnwick Bridesmaid*, roan, born April 8; s *Gainford Sweetmeat* 98887, d *Alnwick Pride* (vol. 56, p. 843) by *Star of Freedom* 90230.
 916 IV. (£3.)—SIR RICHARD COOPER, BT, Shenstone Court, Lichfield, for *Strowan Buttercup* 31st, roan, born April 15, bred by Capt Graham Stirling, Strowan, Crieff, N B; s *Bennan* 101509, d *Strowan Buttercup* 23rd (vol. 55, p. 1158) by *Strowan Seal* 80066.
 917 E. N. & H. C.—RICHARD CORNELIUS, Bankfield, Eastham, Cheshire, for *Bankfields Belle*.

Class 98.—Group Class, for the best collection of either three or four Shorthorn Cows or Heifers, bred by Exhibitor. Open to animals entered in Classes 92 to 97 and 100 to 102 only. [7 entries, none absent.]

- 880, 889, 900, 919 I. (£15.1) — W. T. GARNE & SON, Aldsworth, Northleach, for *Village Lassie*, *Village Countess*, *Village Lass*, and *Princess May*.
 853, 875, 913 II. (£10.) — R. J. BALSTON, Bilsington Priory, Ashford, Kent, for *Bilsington Rosebud*, *Dewlap*, and *Bilsington Daydream*.
 859, 880, 897 E. N. & H. C.—SIR RICHARD COOPER, BT, Shenstone Court, Lichfield, for *Waterloo Lady* 35th, *Ashlys Amies*, and *Ashlys Pansy*.

Dairy Shorthorns.

Class 99.—Shorthorn Bulls, calved in 1910. [4 entries, none absent.]

The dams and sire's dams of all bulls entered in Class 99 must have been mentioned in the award list or have received Certificate of Merit in milking trials or tests recognised by the Dairy Shorthorn (Coates's Herd Book) Association, or in classes set apart for Dairy Shorthorns since a standard quantity of milk has been a necessary qualification; or they must have a yearly milk record of either 6,000 lb. as a first calved heifer or 8,000 lb. as a cow, such record to have been published in the year book of the Dairy Shorthorn (Coates's Herd Book) Association.

- 929 I. (£10.)—ROBERT W. HOBBS & SONS, Kelmscott, Lechlade, for *Kelmscott Tarquin* 7th, roan, born Feb. 27; s *Tarquin* 11th 100854, d *Galentia* 71st (vol. 53, p. 853) by *Red Waterloo* 6th 82034.
 931 II. (£6.)—LORD ROTHSCHILD, Tring Park, Herts, for *Ambassador*, roan, born July 25; s *Conjuror* 91310, d *Aster* (vol. 56, p. 1191) by *Magna Charia* 77188.
 932 III. (£4.)—SAMUEL SANDAY, Puddington Hall, Chester, for *Puddington Pimpernel*, red and little white, born March 24; s *Proud Prince* 100612, d *Rosebud* 2nd (vol. 55, p. 1115) by *Sir Barrington* 5th 75642.
 930 E. N. & H. C.—WILLIAM NISBET, Lordship, Hinxton, Great Chesterford, for *Hinxton Kirklevington Duke*.
 929, 944, 981 (Cup.)—ROBERT W. HOBBS & SONS, for *Kelmscott Tarquin* 7th, Hawthorn 7th, and *Darling* 28th.
 931, 971, 983 (E. N. for Cup.)—LORD ROTHSCHILD, for *Ambassador*, *Rosebud* 7th, and *Fairy Duchess* 33rd.

Class 100.—Shorthorn Dairy Cows (in-milk), calved in or before 1906.

[31 entries, 7 absent.]

- 944 I. (£10.1 & Champion.4) — ROBERT W. HOBBS & SONS, Kelmscott, Lechlade, for *Hawthorn* 7th, roan, born Dec. 7, 1905, calved March 31, 1911; s *Village Lad* 33746, d *Hawthorn* 5th by *Sandsman* 78276.
 960 II. (£6.1 & E. N. for Champion.4) — J. M. STRICKLAND, Warren House Brandsby, Easingwold, for *Brandsby's Princess* (vol. 58, p. 1154), red, born Feb. 18, 1905, calved May 10, 1911; s *Brpton Judge* 82768, d *Princess May* by *Coming Star* 57082.
 947 III. (£4.1) — GEORGE B. NELSON, Cockerham Hall, Garstang, for *Bridge Countess* (vol. 53, p. 826), roan, born Feb. 3, 1905, calved June 9, 1911, bred by J. Dawson, Heggie Foot, Hesketh New Market, Wigton; s *Duke of Heggie* 83356, d *Barbara* by *Vanguard* 54249.

¹ Prizes given by the Shorthorn Society.

² Prizes given by the Dairy Shorthorn (Coates's Herd Book) Association.

³ Challenge Cup given through the Dairy Shorthorn (Coates's Herd Book) Association for the best Group of one Bull and two Cows or Heifers in Classes 99-102.

⁴ Champion Prize of £10 given by the Dairy Shorthorn (Coates's Herd Book) Association for the best Cow or Heifer in Classes 100-103.

Award of Live Stock Prizes at Norwich, 1911. lxx

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 954 IV. (£3.)—LORD ROTHSCCHILD, Tring Park, Herts., for Cherry Blossom (vol. 56, p. 1092), roan, born April 13, 1908, calved May 18, 1911; s. Rodney 89858, d. Cherry Bump by Golden Cherry*, Prince 70521.
- 942 V. (£3.) J. L. CROSS, (author) Towers, Rugby, for Nelly Lee 24th (vol. 53, p. 1178), roan, born Oct. 12, 1904, calved June 2, 1911, bred by J. W. Sanders, Gilmorton, Lutterworth; s. Prince Sotlaw 2nd 86965, d. Nelly Lee 15th by Duke of Warlaby 72423.

- 945 R. N. & H. C.—ROBERT W. HOBBS & SONS, for Snowdrop 52nd.

Class 101.—*Shorthorn Dairy Cows (in-milk), calved in 1907.*¹

[11 entries, 2 absent.]

- 970 I. (£10.)—LORD ROTHSCCHILD, Tring Park, Herts., for Rosebud 7th (vol. 54, p. 1098), roan, born Jan. 29, calved May 12, 1911, bred by T. Hunter, Stone Row Head Farm, Lancaster; s. Ingram's Chief 92034, d. Rosebud 2nd by Silver King 77867.
- 966 II. (£6.)—EDWARD S. GODSELL, Salmon's Spring Brewery, Stroud, for Oxford Aliffe, roan, born Oct. 30, calved Dec. 8, 1910, bred by George Taylor, Cranford, Middlesex; s. Wild Prince 16th 93910, d. Oxford Duchess of Calthwaite 31st by Oxford Duke of Calthwaite 32nd 89213.
- 973 III. (£4.)—MRS. A. G. F. THORNTON, Kingsthorpe Hall, Northampton, for Lady Thrush 3rd, white, born May 20, calved March 15, 1911, bred by the Rev. G. Moore, Cowley Vicarage, Oxford; s. Baxter's Fancy 82833, d. Lady Thrush (vol. 53, p. 1289) by Pretender 79592.

- 965 R. N. & H. C.—C. R. W. ADEANE, Babraham Hall, Cambridge, for Louise 10th.

Class 102.—*Shorthorn Dairy Heifers (in-milk), calved in or after 1908.*²

[12 entries, 5 absent.]

- 983 I. (£10.)—LORD ROTHSCCHILD, Tring Park, Herts., for Fairy Duchess 33rd (vol. 55, p. 1102), roan, born Feb. 10, 1908, calved May 1, 1911; s. Conjuror 91310, d. Fairy Duchess 19th by Scottish Beau 69552.
- 981 II. (£6.)—ROBERT W. HOBBS & SONS, Kelmscott, Lechlade, for Darling 28th (vol. 55, p. 796), light roan, born Aug. 10, 1908, calved April 20, 1911; s. M.C. 92480, d. Darling 23rd by Duke of Barrington 63rd 80603.
- 986 III. (£4.)—SAMUEL SANDAY, Puddington Hall, Chester, for Queen of Hearts 2nd (vol. 55, p. 1115), red and little white, born Jan. 8, 1908, calved May 10, 1911; s. Beau Furze 04251, d. Queen of Hearts by Wild Duke of Geneva 245th 87714.
- 982 R. N. & H. C.—ROBERT W. HOBBS & SONS, for Fancy 27th.

Class 103.—*Milk Yield Prizes, open to Shorthorn Cows and Heifers entered in Classes 92, 93, 100, 101, and 102 only.* [33 entries, 4 absent.]

- 973 I. (£10.)—MRS. A. G. F. THORNTON, for Lady Thrush 3rd. (See Class 101.)
- 970 II. (£8.)—LORD ROTHSCCHILD, for Rosebud 7th. (See Class 101.)
- 944 III. (£4.)—ROBERT W. HOBBS & SONS, for Hawthorn 7th. (See Class 100.)
- 934 R. N. & H. C.—C. R. W. ADEANE, for Babraham Eva Bates.

Lincolnshire Red Shorthorns.³

N.B.—In the Lincolnshire Red Shorthorn Classes, the number inserted within brackets after the name of an animal indicates that the animal is entered in Coates's Herd Book. A number without brackets indicates that the animal is registered in the Lincolnshire Red Shorthorn Herd Book.

Class 104.—*Lincolnshire Red Shorthorn Bulls, calved in 1905, 1906, 1907, or 1908.* [5 entries, none absent.]

- 991 I. (£10, & Champion,*)—J. G. WILLIAMS, Pendley Manor, Tring, for Grange Prince 4843, born Jan. 1908, bred by E. H. Cartwright, Keddington Grange, Louth; s. Stenigot Bloom Boy 3411, d. Keddington Butterfly 2nd by Conisholme Boy 347.
- 987 II. (£6.)—AUGUSTUS P. BRANDT, Castle Hill, Bletchingley, for King Louis 5467, born Feb. 26, 1907, bred by S. Crawley, Hemington, Gundle; s. King's Counsel 3990, d. Well Duchess 4th by Prince Louis (81921).
- 988 III. (£4.)—CHARLES F. SCORER, Whitehall, Bracebridge Heath, Lincoln, for Kirkby Imperial 4890, born Dec. 27, 1905, bred by John Todd, Kirkby Green, Lincoln; s. Imperial Favourite 80233, d. Kirkby Nonpareil by Benniworth 4th 620.
- 990 R. N. & H. C.—FRED SHARP, Swineshead, Boston, for Thimbleby Curly Coat.

Class 105.—*Lincolnshire Red Shorthorn Bulls, calved in 1909.*

[5 entries, 1 absent.]

- 992 I. (£10, & R. N. for Champion,*)—AUGUSTUS P. BRANDT, Castle Hill, Bletchingley, for Bletchingley Brennus 8595, born March 2, bred by R. Chatterton, Stenigot, Lincoln; s. Keddington Comet 3443, d. Stenigot Duchess 3rd by County Member 83.

¹ Prizes given by the Shorthorn Society.

² Prizes given by the Dairy Shorthorn (Coates's Herd Book) Association.

³ £80 towards these Prizes were given by the Lincolnshire Red Shorthorn Association.

⁴ Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Bull in Classes 104-106.

lxx *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

996 II. (£6).—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Scampton King of the Valley 7123, born in April, bred by G. E. Sanders, Scampton, Lincoln; s. Brinden Grenadier 4274 by Great Tom of Lincoln 392.

993 III. (£4).—ROBERT CHATTERTON, Welbourn Hall, Lincoln, for Guanero, born May 2, bred by Wm Chatterton, Hallington, Louth; s. Guardian 4397 by Nero 2891.

995 R. N. & H. C.—CAPT. J. P. MEADE, Earsham Hall, Bungay, for Earsham Chum.

Class 106.—*Lincolnshire Red Shorthorn Bulls, calved in 1910.*

[5 entries, 1 absent.]

1001 I. (£10).—J. G. WILLIAMS, Pendley Manor, Tring, for Elkington Marshman, born Feb. 29, bred by W. G. Smyth, Elkington Hall, Louth; s. Withern Boy 4th 5081, d. by Stenigot Porter 2nd 4594.

998 II. (£6).—JOHN EVENS, Burton, Lincoln, for Welbourne Meteor 8010, born March 9, bred by J. O. Mountain, Welbourne, Lincoln; s. Horkstow Meteor 8111, d. Welbourne Livaceous by Stenigot Red Chieftain 2652.

997 III. (£4).—ROBERT CHATTERTON, Welbourn Hall, Lincoln, for Neptune's Bloom, born April 17; s. Hallington Neptune 7004, d. Stenigot Bloom 21st by Keddington Comet 3443.

1000 R. N. & H. C.—CHARLES E. SCORER, Whitehall, Bracebridge Heath, Lincoln, for Bracebridge Milker.

Class 107.—*Lincolnshire Red Shorthorn Cows (in-milk), calved in or before 1907.*

[10 entries, 1 absent.]

1002 I. (£10, & Champion.¹)—JOHN EVENS, Burton, Lincoln, for Benniworth Bloom (vol. 13, p. 239), born Feb. 13, 1901, calved Feb. 13, 1911, bred by the late T. Bott, Benniworth, Donington-on-Bain; s. Saltfleet Acton 1664 by Barkwith Hallington 309.

1005 II. (£6).—PERCY HENSMAN, Fulletby Grange, Horncastle, for Fulletby Tindall 2nd (vol. 16, p. 300), born March 26, 1907, calved Feb. 27, 1911; s. Scampton Formula 4593, d. Fulletby Tindall C. by Poolham Scampton 3rd 3013.

1011 III. (£4).—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Sherwood Daisy 3rd, born Oct., 1907, calved May 4, 1911; s. Queen's Birthday 4511, d. Sherwood Daisy by Kirkby Abbott 2945.

1006 R. N. & H. C.—PERCY HENSMAN, for Keal Hilda.

Class 108.—*Lincolnshire Red Shorthorn Heifers (in-milk), calved in 1908.*

[5 entries, none absent.]

1016 I. (£10).—J. G. WILLIAMS, Pendley Manor, Tring, for Pendley Violet 3rd, born March 8, calved Jan. 20, 1911; s. Bonby Excursionist 4th 5161, d. Benniworth Violet 8th by Saltfleet Echo 8038.

1012 II. (£6).—AUGUSTUS P. BRANDT, Castle Hill, Bletchingley, for Deeping Daisy 3rd (vol. 16, p. 268), born March 1, calved May 28, 1911, bred by G. Freir, Toilethorpe House, Deeping St. Nicholas; s. Bigby Cynical 5155, d. Deeping Daisy by Horkstow Commander 2832.

1014 III. (£4).—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Benniworth Pink, born Jan. 20, calved May 1, 1911, bred by C. F. Bott, Benniworth, Lincoln; s. Somercoates Bonus 4577, d. by Benniworth Actor 2015.

1015 R. N. & H. C.—J. G. WILLIAMS, for Pendley Rosebud 2nd.

Class 109.—*Lincolnshire Red Shorthorn Heifers, calved in 1909.*

[8 entries, none absent.]

1023 I. (£10, & R.N. for Champion.¹)—J. G. WILLIAMS, Pendley Manor, Tring, for Deeping Pansy, born in July, bred by G. Freir, Deeping St. Nicholas, Spalding; s. Foston Clement 3877, d. Wykeham Pansy 3rd by Strubby Red Coat 3033.

1017 II. (£6).—AUGUSTUS P. BRANDT, Castle Hill, Bletchingley, for Bletchingley Bellona (vol. 16, p. 267), born April 18, bred by George Freir, Toilethorpe House, Deeping St. Nicholas, Spalding; s. Buscot Rupert (104948), d. Deeping Choice by Anderby Champion 1753.

1018 III. (£4).—AUGUSTUS P. BRANDT, for Bletchingley Boadicea (vol. 16, p. 268), born June 9; s. King Louis 5457, d. Stenigot Bloom 10th by Red Chief 2611.

1024 R. N. & H. C.—J. G. WILLIAMS, for Pendley Princess.

Class 110.—*Lincolnshire Red Shorthorn Heifers, calved in 1910.*

[9 entries, 1 absent.]

1031 I. (£10).—J. G. WILLIAMS, Pendley Manor, Tring, for Blue Eye 4th, born Jan. 17, bred by J. W. Farrow & Sons, Strubby Manor, Alford; s. Red Chief 3rd 4939, d. Blue Eye 3rd by Under Porter 3126.

1032 II. (£6).—J. G. WILLIAMS, for Pendley Starlight 3rd, born March 18; s. Keddington Comet 3443, d. Pendley Starlight 1st by Keddington Baron 4881.

¹ Champion Prize of £10 given by the Lincolnshire Red Shorthorn Association for the best Cow or Heifer in Classes 107-110.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1025 III. (£4.)—AUGUSTUS P. BRANDT, Oastle Hill, Bletchingley, for Bletchingley Ceres, born March 8, bred by J. G. Williams, Pendley Manor, Tung; s. Koddington Comet 3143 d. Bonniworth Violet 6th (vol. 13, p. 240) by Salfleet Echo 3038

1037 E. N. & H. C. HENRY NEESHAM, Lodge Farm, Canwick, Lincoln, for Canwick Wispington 4th.

Class 111.—Milk Yield Prizes, open to Lincolnshire Red Shorthorn Cows and Heifers entered in Classes 107 and 108 only.

[5 entries, 1 absent.]

1010 I. (£10.)—CHARLES F. SCORER, Whitehall, Bracebridge Heath, Lincoln, for Bracebridge No. 102, born in March, 1900, calved May 8, 1911, bred by Fred Scorer, Sudbrook, Lincoln; s. Red Brick 921, d. Bracebridge No. 50 by Sudbrook Giant 250.

1009 II. (£6.)—HENRY NEESHAM, Lodge Farm, Canwick, Lincoln, for Canwick Dairy-maid 2nd (vol. 10, p. 308), born Feb. 2, 1901, calved April 2, 1911; s. Snapshot 4100, d. Canwick Dairy-maid 1st by Kirkby Monarch 2558.

1003 III. (£4.) JOHN EVENS, Burton, Lincoln, for Burton Cork 8th (vol. 14, p. 258), born March 30, 1905, calved June 9, 1911; s. Burton Rex 2131, d. Burton Cork 3rd by Red Rover 77618

1004 R. N. & H. C.—JOHN EVENS, for Burton Spotted 5th.

Herefords.¹

Class 112.—Hereford Bulls, calved in 1906, 1907, or 1908.

[5 entries, 1 absent.]

1038 I. (£10, & R. N. for Champion.)—HENRY W. TAYLOR, Showle Court, Ledbury, for Quarto 27143, born April 6, 1908; s. Confidence 21288, d. Maidenhair by Samson 20312.

1035 II. (£6.)—SIR J. R. G. COTTELL, BT., Garmons, Hereford, for Royal Ringer 20458, born March 20, 1907, bred by W. Griffiths, Aldersend, Tarrington; s. Change Ringer 24778, d. Britannia by Bruce 18255.

1034 III. (£4.)—PETER COATS, Sheepcote, Clifford, Herefordshire, for Provost 27125, born Feb. 7, 1908; s. Fusilier 21402, d. Douglas Pearl by Endale Hero 18825.

1033 E. N. & H. C.—RALPH T. HINCKES, Shetton Court, Mansell Lacy, Hereford, for Eaton Pearl.

Class 113.—Hereford Bulls, calved in 1909. [17 entries, 4 absent.]

1041 I. (£10, & Champion.)—THE EARL OF COVENTRY, Croome Court, Severn Stoke, for Dollymount 27500, born Jan. 17; s. Challenger 26000, d. Dolly by Earl Marshal.

1055 II. (£6.)—ARTHUR P. TURNER, The Leen, Pembridge, for Montezuma 27706, born Jan. 24; s. Lord Lieutenant 22328, d. Moonwort by Parton 22440.

1040 III. (£4.)—SIR J. R. G. COTTELL, BT., Garmons, Hereford, for Curfew 27476, born May 5; s. Royal Ringer 26458, d. Curly 38th by Rose Cross 2nd 14665.

1047 IV. (£3.)—O. VENABLES LLEWELLYN, Llysdinam, Newbridge-on-Wye, for Broadward Albion 27404, born Jan. 21, bred by James Edwards, Broadward, Leominster; s. Twyford Legacy 26547, d. Amada by Carbiner 19928.

1048 V. (£3.)—LAWTON MOORE, Brampton Brian, for Brampton Chancellor 27382, born Feb. 9; s. Eaton Masterpiece 25315, d. Brampton Rose 14th by Blair Athol 23290.

1050 E. N. & H. C.—JAMES SIDEX, 59 West Smithfield, London, E.C., for Guardsman.

Class 114.—Hereford Bulls, calved in January or February, 1910.

[23 entries, 3 absent.]

1076 I. (£10.)—JOHN TUDGE, Duxmoor, Craven Arms, for Cameron, born Jan. 12, bred by Capt. E. L. A. Heygate, Buckland, Leominster; s. Highland Prince 26437, d. Ivy (vol. 39, p. 468) by Steelclad 17557.

1059 II. (£6.)—GEORGE BUTTERS, Hill House, Newton, Leominster, for Sailor King, born Jan. 31; s. Sailor Prince 26485, d. Lassie (vol. 39, p. 285) by Scot 25194.

1080 III. (£4.)—J. G. COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, for Shelsley Fusilier, born Jan. 13; s. Shelsley 20480, d. Matilda by Earl Marshal 22106.

1001 IV. (£3.)—J. G. COOKE-HILL, for Shelsley Primer, born Jan. 17; s. Shelsley 26480, d. Primrose (vol. 41, p. 308) by Kinnersley King 20118.

1071 V. (£3.)—DONALD MACLENNAN, Radnor Hall, Eistree, for Eaton Choice, born Jan. 29, bred by C. T. Pulley, Lower Eaton, Hereford; s. Eaton Masterpiece 25315, d. Loyalty 2nd (vol. 41, p. 696) by Eaton Defender 12th 26002.

1072 E. N. & H. C.—LAWTON MOORE, Brampton Brian, for Brampton Dauntless.

Class 115.—Hereford Bulls, calved in 1910, on or after March 1.

[8 entries, none absent.]

1083 I. (£10.)—MRS. E. MEDLICOTT, Bodenham, Herefordshire, for Bodenham Leonardo, born April 6; s. Locarno 20797, d. Baroness 3rd (vol. 41, p. 500) by Whitfield Roberts.

¹ £50 towards these Prizes were given by the Hereford Herd Book Society.

² Champion Prize of £10 10s. given by the Hereford Herd Book Society for the best Bull in Classes 112-115.

lxxii *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1079 II. (£6.)—SIR J. R. G. COTTERELL, BT, Garnons, Hereford, for *Royal Scarah*, born March 9; s. *Royal Ringier* 26458, d. *Ladybird* (vol. 38, p. 338) by *Ramsey* 2nd.
 1081 III. (£4.)—ALLEN E. HUGHES, Wintertcott, Leominster, for *Paget*, born March 7; s. *Ronald* 26450, d. *Petrel* (vol. 11, p. 507) by *Bacon* 22719.
 1084 R. N. & H. C.—JOHN TUDGE, Duxmoor, Craven Arms, for *Duxmoor*.

Class 116.—*Hereford Cows (in-milk), calved in or before 1907.*

[3 entries.]

- 1087 I. (£10. & R. N. for Champion.¹)—PETER COATS, Sheepcote, Clifford, Herefordshire, for *Ladybird* 2nd (vol. 41, p. 202), born Feb. 12, 1907, calved Jan. 1, 1911; s. *Endale* 21366, d. *Ladybird* by *Bago Protector* 21187.
 1090 II. (£6.)—W. B. TUDGE, Stepaside, Ombury, Salop, for *Gwendolme* (vol. 41, p. 801), born Oct. 28, 1906, calved Jan. 9, 1911, bred by W. Tudge, Sawbridgeworth, Herts; s. *Commandant* 22040, d. *Royal Daisy* 5th by *Rhodesia* 10044.
 1089 III. (£4.)—THE EARL OF COVENTRY, Croome Court, Severn Stoke, for *Mistake* (vol. 40, p. 337), born May 11 1901, calved April 26, 1911; s. *Horne Office* 20073, d. *Misdelivery* by *Viscount* 18648.

Class 117.—*Hereford Heifers (in-milk), calved in 1908.*

[3 entries, 1 absent.]

- 1092A I. (£10.)—PETER COATS, Sheepcote, Clifford, for *Ida* (vol. 40, p. 308), born Feb. 20, 1908, calved Jan. 10, 1911; s. *Fisher* 21402, d. *Isabella* by *Endale* 21366.
 1092 II. (£6.)—D. A. THOMAS, Llanwern, Newport, Mon., for *Bonnie Belle* (vol. 40, p. 791), born Jan. 4, calved April 11, 1911, bred by the late W. Thomas, The Hayes, Sully, Cardiff; s. *Perfection* 22450, d. *Gazelle* (vol. 30, p. 753) by *Royalist* 14124.

Class 118.—*Hereford Heifers, calved in 1909.* [7 entries, none absent.]

- 1090 I. (£10. & Champion.¹)—J. G. COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, for *Shelsley Primula* (vol. 41, p. 308), born Jan. 27; s. *Shelsley* 26480, d. *Primrose* by *Kimmersley King* 20116.
 1098 II. (£6.)—KENNETH W. MILNES, Beam House, Montford, Shrewsbury, for *Gems Ray* (vol. 41, p. 571), born Feb. 7; s. *Sir James* 26489, d. *Jemima* by *Goshen* 17284.
 1094 III. (£4.)—W. H. B. CAVE, Wall End, Monkland, Leominster, for *Fairy Bright*, (vol. 41, p. 789), born Jan. 4, bred by E. Bright, Ivingtonbury, Leominster; s. *Pylon General* 23088, d. *Fairy* by *Fine Lad* 19414.
 1099 R. N. & H. C.—W. B. TUDGE, Stepaside, Ombury, Salop, for *Dorothy Mary*.

Class 119.—*Hereford Heifers, calved in 1910.* [13 entries, 1 absent.]

- 1103 I. (£10.)—J. G. COOKE-HILL, Shelsley Bank, Stanford Bridge, Worcester, for *Shelsley Florence*, born Jan. 11; s. *Eaton Sovereign* 26832, d. *Florence* (vol. 39, p. 314), by *Gambler* 20830.
 1106 II. (£6.)—GERARD DENNY, Byford Court, Hereford, for *Eglantine*, born Jan. 2; s. *Albatross* 19193, d. *Brian Rose* (vol. 41, p. 314) by *Rodney Stone* 19692.
 1110 III. (£4.)—MRS. E. MEDLICOTT, Roddham, Herefordshire, for *Virginia* 3rd, born Feb. 28; s. *Locarno* 20797, d. *Virginia* (vol. 41, p. 584) by *Lancer* 21515.
 1109 IV. (£3.)—MRS. E. MEDLICOTT for *Sunlight* 2nd, born March 11; s. *Locarno* 20797, d. *Kitty* 14th (vol. 41, p. 563) by *Blue Run* 18713.
 1112 R. N. & H. C.—D. A. THOMAS, Llanwern, Newport, Mon., for *Coalport*.

Devons.²

Class 120.—*Devon Bulls, calved in 1906, 1907, or 1908.* [4 entries.]

- 1115 I. (£10. & R. N. for Champion.³)—VISCOUNT PORTMAN, Brynston, Blandford, for *Bryanston Pitcher* 5980, born May 8, 1907, bred by the Hon. R. W. B. Portman, Hestercombe, Taunton; s. *Pound Pink* 'Un 3330, d. *Nurthy Curly* 15th 20342 by *Magna Charta* of *Pound* 4446.
 1114 II. (£6.)—VISCOUNT PORTMAN, for *Bryanston Amber* 6271, born August 6, 1908; s. *Bryanston Ajax* 5974, d. *Goldcup* 18044 by *Major* 1250.
 1113 III. (£4.)—MARCUS JOHN KIDNER, Fennington, Kingston, Taunton, for *Viscount Nunnington* 6938, born October 23, 1907, bred by the late W. R. H. Tyler, Roddham, Washford; s. *Lord Fitzworthy* 4440 or *Curly Locks* 1373, d. *Lady Nunnington* by *Earl of Nunnington* 1900.
 1116 R. N. & H. C.—W. R. & ABRAHAM TRIBLE, Halsdon Barton, Holsworthy, for *Hero*.

¹ Champion Prize of £10 10s given by the Hereford Herd Book Society for the best Cow or Heifer in Classes 116-119.

² £50 towards these Prizes were given by the Devon Cattle Breeders' Society.

³ Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Bull in Classes 120-122.

Award of Live Stock Prizes at Norwich, 1911. lxxiii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 121. - *Devon Bulls, calved in 1909.* [8 entries, none absent.]

- 1121 I. (£10, & Champion.¹)—CHARLES MORRIS, Highfield Hall, St. Albans, for Highfield Noble 6780, born March 19; s. Pound Bellringer 5617, d. Graceful 16226 by John Brown 3902.
 1119 II. (£6.)—SAMUEL KIDNER, Bickley, Milverton, for Stockley Goldfinder, born May 23, bred by W. Tuckett, Stockley Pomeroy, Crediton; s. Cronje 5470, d. Daisy 23147 by Capton Harold 1728.
 1117 III. (£4.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Claudius 6651, born June 15, bred by His Majesty King Edward VII., s. Ben (Holconcott 434), d. Clampt (Queen 19797 by The Duke 4678).
 1118 R. N. & H. C.—R. A. CLARKE, Manor Farm, Chiseldon, Stoke-under-Ham for Rainbow Goodman.

Class 122. - *Devon Bulls, calved in 1910.* [9 entries, 3 absent.]

- 1128 I. (£10.)—CHARLES MORRIS, Highfield Hall, St. Albans, for Highfield Victor, born Jan. 4; s. Pound Lord Brassy 5th 5622, d. Highland Countess 21522 by Pound Monarch 5089.
 1132 II. (£6.)—MRS. A. C. SKINNER & SON, Pound, Bishop's Lydeard, for Lord Bob, born April 27, bred by R. L. Cornish, Pixford, Combe Florey; s. Bean Planter 4139, d. Daisy 8th 19948 by Lord Palmerston 4338.
 1120 III. (£4.)—SAMUEL KIDNER, Bickley Milverton, for Wellington, born April 10; s. Bean Planter 4139, d. Crusoe's Stuckey 18302 by Crusoe 3801.
 1133 R. N. & H. C.—SIR G. A. H. WILLS, BT. Northmoor, Dulverton, for Northmoor Royal Mail.

Class 123. - *Devon Cows or Heifers (in-milk), calved in or before 1908.*

[5 entries, 2 absent.]

- 1138 I. (£10.)—MRS. A. C. SKINNER & SON, Pound, Bishop's Lydeard, for Pound Brassy 12th 21665, born March 24, 1900, calved May 11, 1911, bred by the late A. C. Skinner; s. Royal Charter 4188, d. Brassy 6th 16212 by Harold 2nd 8126.
 1136 II. (£6.)—VISCOUNT PORTMAN, Bryanston, Blandford, for Bryanston Graceful 22176, born March 19, 1908, calved April 15, 1911, s. Browda Captain 5440, d. Compton Goodluck 2nd 22313 by Overton Relapse 3078.
 1134 III. (£4.)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Lucy 19800, born February 10, 1904, calved January 24, 1911, bred by His Majesty King Edward VII.; s. Benedictine 1141, d. Lovely 5th, 19857 by Lord Currypool 2nd 2619.

Class 124. - *Devon Heifers, calved in 1909.* [5 entries, 1 absent.]

- 1140 I. (£10, & R.N. for Champion.²)—CHARLES MORRIS, Highfield Hall, St. Albans, for Highfield Countess 2nd 23710, born Jan 15; s. Pound Bellringer 5617, d. Highfield Countess 21522 by Pound Monarch 5089.
 1142 II. (£6.)—VISCOUNT PORTMAN, Bryanston, Blandford, for Bryanston Partridge 23817, born Jan. 12 s. Bryanston Ajax 5974, d. Compton Princess 2nd by First Venture.
 1143 III. (£4.)—VISCOUNT PORTMAN, for Carol 23822, born March 9, bred by F. Hornby; s. Carolus 5450, d. Flighty 20886, by Bearwood Coronation 4708.
 1141 R. N. & H. C.—CHARLES MORRIS, for Highfield Moss Rose 2nd.

Class 125. - *Devon Heifers, calved in 1910.* [9 entries, 2 absent.]

- 1144 I. (£10, & Champion.²)—HIS MAJESTY THE KING, Royal Farms, Windsor, for Beauty of Windsor, born April 15, bred by His Majesty King Edward VII.; s. Capton Ploughboy 4923, d. Beauty 8th 27871 by Lord Breach 3467.
 1152 II. (£6.)—MRS. A. C. SKINNER & SON, Pound, Bishop's Lydeard, for Pound Rosebud 17th, born Feb. 19; s. Pound Gladiator 6169, d. Pound Rosebud 12th 22353 by Pound Hestercombe 5841.
 1149 III. (£4.)—CHARLES MORRIS, Highfield Hall, St. Albans, for Highfield Lilac 2nd, born Jan. 15; s. Pound Lord Brassy 5th 5622, d. Highfield Lilac 22198 by Museum.
 1145 R. N. & H. C.—KIDNER BROS., Abbots Farm, Stoke Holy Cross, Norwich, for Knowle Favourite.

Class 126. - *Devon Dairy Cows (in-milk) calved in or before 1908.*

[7 entries, 1 absent.]

- 1158 I. (£10.)—R. A. CLARKE, Manor Farm, Chiseldon, Stoke-under-Ham, for Maud (Supp. C. 90), born May 4, 1904, calved May 27, 1911; s. Morning Star 4639, d. Maud by Number One 4460.
 1153 II. (£6.)—VISCOUNT CHETWYND, Wyndthorpe, Doncaster, for Compton Lovely 21878, born Feb. 5, 1904, calved June 5, 1911, bred by the late John Chick, Compton Valence, Dorchester. s. Compton Juniper 4949, d. Compton Lofty 19333 by Compton Masher 4366.

¹ Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Bull in Classes 120-123.

² Champion Prize of £10 10s. given by the Devon Cattle Breeders' Society for the best Cow or Heifer in Classes 123-126.

lxxiv *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1159 III. (£4.)—MARCUS JOHN KIDNER, Fennington, Kingston, Taunton, for Dorothy Lass 19511, born March 6, 1902, calved March 8, 1911, bred by W. Kidner, Stoke Holy Cross, Norwich; s. Hestercombe May Day 4214, d. Dorothy 4th 17617 by Councillor.
- 1156 R. N. & H. C.—J. H. CHICK, Wynford Eagle, Dorchester, for Wynford Fillpall.

Class 127.—*Milk-yield Prizes, open to Devon Cows and Heifers entered in Classes 123 and 126 only.* [7 entries, 1 absent.]

- 1153 I. (£10.)—VISCOUNT CHETWYND, for Compton Lovely. (See Class 126.)
- 1155 II. (£6.)—JOHN HENRY CHICK, Wynford Eagle, Dorchester, for Wynford Cherry, (Supp. A. 81), born Jan., 1902, calved May 26, 1911.
- 1158 III. (£4.)—R. A. CLARKE, for Maud. (See Class 126.)
- 1159 R. N. & H. C.—MARCUS JOHN KIDNER, for Dorothy Lass.

South Devons.¹

Class 128.—*South Devon Bulls, calved in 1906, 1907, 1908, or 1909.*
[3 entries.]

- 1161 I. (£10, & Champion.²)—BEN LUSCOMBE, Langston, Kingston, Kingsbridge, for Leigham Sort 3198, born March 12, 1903, bred by Butland Brothers, Leigham, Plympton; s. Lo Ben 2187, d. Handsome 4040 by Cromer 969.
- 1162 II. (£6.)—W. & H. WHITLEY, Primley Farm, Paignton, for Primley Archduke 2801, born March 18, 1907, bred by W. Whitley, Primley Farm; s. Manager 2173, d. Curly 4281 by Snowdrop's Doncaster 931.
- 1160 R. N. & H. C.—BUTLAND BROTHERS, Leigham, Plympton, for Leigham Favourite.

Class 129.—*South Devon Bulls, calved in 1910.* [3 entries.]

- 1164 I. (£10.)—H. HAWKEN & SON, Okenbury, Kingston, Kingsbridge, for Doncaster 3720, born Feb. 1, bred by E. B. Luscombe, Woodleigh, Kingsbridge; s. High House Prince 2917, d. Myrtle 5465 by Good Enough 1307.
- 1163 II. (£6.)—BUTLAND BROS., Leigham, Plympton, for Leigham Boy 3780, born May 1; s. Henry 7th 3178, d. Snowdrop 4424 by Happy Jack 874.
- 1165 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for Primley Defiance.

Class 130.—*South Devon Cows or Heifers (in-milk), calved in or before 1908.*
[5 entries, none absent.]

- 1168 I. (£10.)—BEN LUSCOMBE, Langston, Kingston, Kingsbridge, for Countess 6010, born March 30, 1904, calved March 12, 1911; s. Mashier 769, d. Dairymaid 4th 4159 by General Buller 1138.
- 1166 II. (£6.)—BUTLAND BROS., Leigham, Plympton, for Fancy 2nd 5822, born June 28, 1904, calved Feb. 8, 1911; s. Leigham Champion 1607, d. Fancy 4038 by Cromer 969.
- 1169 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for Daisy.

Class 131.—*South Devon Heifers, calved in 1909.* [3 entries.]

- 1171 I. (£10, & R. N. for Champion.²)—BUTLAND BROS., Leigham, Plympton, for Snowdrop 5th 8972, born Feb. 25; s. Good Sort 2378, d. Snowdrop 4424 by Happy Jack 874.
- 1172 II. (£6.)—BEN LUSCOMBE, Langston, Kingston, Kingsbridge, for Fidget 5th 9261, born Jan. 4; s. Challenger 1823, d. Fidget 4th 6815 by Silver King 1751.
- 1173 R. N. & H. C.—W. & H. WHITLEY, Primley Farm, Paignton, for Primley Clematis.

Class 132.—*South Devon Heifers, calved in 1910.* [5 entries, 1 absent.]

- 1175 I. (£10.)—H. HAWKEN & SON, Okenbury, Kingston, Kingsbridge, for Dairymaid 10023, born Jan. 6; s. Ruier 3023, d. Countess 7777 by Elector 2354.
- 1174 II. (£6.)—BUTLAND BROS., Leigham, Plympton, for Handsome 9th 9765, born March 28; s. Henry 7th 3178, d. Handsome 4th 6056 by Leigham Champion 1607.
- 1177 R. N. & H. C.—W. & H. WHITLEY, for Primley Dairymaid.

Class 133.—*Milk Yield Prizes, open to South Devon Cows and Heifers entered in Class 130 only.* [3 entries, none absent.]

- 1169 I. (£10.)—W. & H. WHITLEY, Primley Farm, Paignton, for Daisy 6375, born Oct. 28, 1905, calved May 11, 1911, bred by H. Brooking, Bowden, Yealmpton; s. Babland Boy 1793, d. Duhla 5256 by Sunbeam's Doncaster 1279.
- 1167 II. (£6.)—THOMAS CUNDY, 25 Benbow Street, Stoke, Devonport, for Red Rose, born Dec. 12, 1904, calved March 20, 1911; s. Useful 1394, d. Alice 3880 by Snowdrop's Duke 932.

¹ £20 towards these Prizes were given by the South Devon Herd Book Society.

² Challenge Cup, given by a member of the R.A.S.E. interested in the breeding of South Devons, for the best Animal in Classes 128-132.

Award of Live Stock Prizes at Norwich, 1911. lxxv

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Longhorns.¹

Class 134.—Longhorn Bulls, calved in 1906, 1907, 1908, or 1909.

[6 entries, none absent.]

- 1179 I. (£10. & B.N. for Champion.)—LORD GERARD, Eastwell Park, Ashford, Kent, for Eastwell Eagle 500, dark brindle and white, born Jan. 20, 1908; s. Imperial 508, d. Melcombe Lovely by Melcombe Conqueror 324.
 1180 II. (£6.)—LORD GERARD, for Eastwell Emperor 502, dark brindle and white, born March 15, 1908; s. Westmeath Squire 435, d. Black-eyed Susan by Kenilworth 317.
 1184 III. (£4.)—EDWARD TINGEY, Dersingham, King's Lynn, for Young Lollo 558, brindle and white, born May 15, 1907, bred by the Hon. E. A. Fitzroy, Foxhill, West Haddon; s. Duke Lollo 499, d. Rosy by Prince George 393.
 1181 R. N. & H. C.—J. L. & O. RILEY, Putley, Ledbury, for Putley Regent.

Class 135.—Longhorn Bulls, calved in 1910. [4 entries.]

- 1188 I. (£10.)—W. HANSON SALE, Arden Hill, Atherstone, for Arden Rover, red and white, born July 16; s. Putley Gay Lad 548, d. Lady Emily (vol. 4, p. 20) by Young Bow Horn 438.
 1186 II. (£6.)—J. L. & O. RILEY, The Braings, Putley, Ledbury, for Putley Shyluck, red, brindle and white, born May 5; s. Putley Monarch 475, d. Putley Portia (vol. 6, p. 22) by His Honour 380.
 1187 III. (£4.)—W. HANSON SALE, for Arden Knight, red and white, born July 23; s. Putley Gay Lad 548, d. Narley's Gipsy Queen (vol. 5, p. 27) by Pretender 2nd 334.
 1185 R. N. & H. C.—F. A. N. NEWDIGATE, M.P., Arbury, Nuneaton, for Lord Friar.

Class 136.—Longhorn Cows or Heifers (in-milk), calved in or before 1908.

[5 entries, 1 absent.]

- 1190 I. (£10.)—J. L. & O. RILEY, The Braings, Putley, Ledbury, for Arden Duchess (vol. 4, p. 10), brindle and white, born April 24, 1903, calved Oct. 28, 1910, bred by W. Hanson Sale, Arden Hill, Atherstone; s. Sancho Panza 395, d. Daisy's Fairest and Best by Warwickshire Lad 360.
 1192 II. (£6.)—W. HANSON SALE, Arden Hill, Atherstone, for Bilston Sunlight (vol. 5, p. 18), brindle and white, born May 20, 1904, calved Jan. 13, 1911, bred by G. H. Tansea, Bilston, Twycross, Atherstone; s. Bilston Monarch 374, d. Bilston Moonshine by Winsome Lad 397.
 1193 III. (£4.)—W. HANSON SALE, for Lady Panza (vol. 4, p. 20), grizzled red and white, born Sept. 8, 1902, calved April 6, 1911, bred by J. R. Watson, South Morsea, Lough, Cumberland; s. Sancho Panza 395, d. Bow Horn of Upton by Earl of Upton 10th 307.

Class 137.—Longhorn Heifers, calved in 1909 or 1910. [8 entries, none absent.]

- 1194 I. (£10. & Champion.)—LORD GERARD, Eastwell Park, Ashford, Kent, for Easter of Eastwell (vol. 7, p. 15), brindle and white, born April 4, 1909; s. Melcombe Emperor 416, d. Bentley Dido by Bentley Wonder 373.
 1196 II. (£6.)—J. L. & O. RILEY, The Braings, Putley, Ledbury, for Putley Emma (vol. 7, p. 32), red, grizzle and white, born June 20, 1909; s. Putley Monarch 475, d. Emily of Eastwell by Young Kenilworth 439.
 1199 III. (£4.)—CHARLES TOLLEMACHE SCOTT, Bosworth Park, Market Bosworth, for Bosworth Dame, dark brindle and white, born May 6, 1910; s. Bosworth Baron 497, d. Perry 3rd by Wootton Wonder 371.
 1197 R. N. & H. C.—J. L. & O. RILEY, for Putley Jessica.

Class 138.—Milk Yield Prizes, open to Longhorn Cows and Heifers entered in Class 136 only. [3 entries, 1 absent.]

- 1192 I. (£10.)—W. HANSON SALE, for Bilston Sunlight. (See Class 136.)
 1193 II. (£6.)—W. HANSON SALE, for Lady Panza. (See Class 136.)

Sussex.²

Class 139.—Sussex Bulls, calved in 1906, 1907, 1908, or 1909.

[5 entries, 1 absent.]

- 1204 I. (£15. & Champion.)—W. A. THORNTON, Lock, Partridge Green, for Prince of Lock 2nd 2480, born Jan. 6, 1908; s. Tutsham Toreador 2016, d. Penshurst Headless 3549 by Young Benares 1702.
 1205 II. (£6. & B. N. for Champion.)—THE HON. R. P. NEVILL, Birling Manor, Maidstone, for Birling Ralph 2373, born Jan. 5, 1907; s. Paley Major 2059, d. Birling Glory 9808, by Birling Gold 1922.

¹ £20 towards these Prizes were given by the Longhorn Cattle Society.

² Silver Challenge Cup given through the Longhorn Cattle Society for the best animal in Classes 134-137.

³ £25 towards these Prizes were given by the Sussex Herd Book Society.

⁴ Champion Silver Medal given by the Sussex Herd Book Society for the best Bull in Classes 139 and 140.

lxxvi *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1202 III. (£4).—SIR HENRY BELL, BT., Mynthurst, Leigh, Reigate, for Prince Tarara 2652, born Jan. 12, 1909, s. Prince of Drungewick 4th 1862, d. Tutsham Tarara 5th 9417 by Freshface 1682.

1204 E. N. & H. C.—W. T. FREMLIN, Milgate Park, Maidstone, for Birling Chris.

Class 140.—*Sussex Bulls, calved in 1910.* [7 entries, 1 absent.]

1213 I. (£15).—W. A. THORNTON, Lock, Partridge Green, for Lock Arab 2619, born Jan. 17; s. Tutsham Toreador 2018, d. Darkey A of Lock 11067 by Prince of Drungewick 3rd 1810.

1207 II. (£6).—JOHN AUNGIER, Lynwick, Rudgwick, for Lynwick Autocrat 2630, born March 28; s. Masterpiece 2330, d. Paley Beauty 9287 by Autocrat 2020.

1211 III. (£4).—GEORGE S. HARRIS, Hylands, Hailsham, for Firelight of Hylands 2737, born Jan. 4; s. Firelight 2335, d. Apsley Lovely 3rd 11281 by Silver King 2022.

1210 E. N. & H. C.—W. G. FLADGATE, Apsley, Thakeham, for Apsley Numbie.

Class 141.—*Sussex Cows or Heifers (in-milk), calved in or before 1908.*

[4 entries.]

1215 I. (£15, & E. N. for Champion.¹)—W. G. FLADGATE, Apsley, Thakeham, Pulborough, for Apsley Fairy 10766, born Jan. 19, 1896, calved Jan. 6, 1911; s. Silver King 2022, d. Fairy 8818 by Drungewick Frebble 2nd 1877.

1217 II. (£6).—W. A. THORNTON, Lock, Partridge Green, for Molly 3rd of Lock 12124, born Feb. 2, 1908, calved Jan. 20, 1911; s. Tutsham Toreador 2018, d. Mayfield Molly 4th 7272 by Young Goldfinder 1467.

1216 III. (£4).—CAMPBELL NEWINGTON, Oakover, Ticehurst, for Ticehurst Stonesdown 10775, born April 22, 1906, calved May 1, 1911, bred by W. Ford, Ticehurst; s. Ranger 1873, d. Stonesdown B1 8342 by Headley of Horsham 1571.

1214 E. N. & H. C.—F. S. W. CORNWALLIS, Linton Park, Maidstone, for Princess Joan 2nd.

Class 142.—*Sussex Heifers, calved in 1909.* [8 entries, 1 absent.]

1221 I. (£15, & Champion.¹)—JAMES BUCHANAN, Lavington Park, Petworth, for Lavington Nora 2nd 12256, born Jan. 17; s. Shillinglee Gold 2nd 2194, d. Apsley Nora 10144 by Duke of Drungewick 3rd 1808.

1219 II. (£6).—JOHN AUNGIER, Lynwick, Rudgwick, for Lynwick Paley Mabel 12201, born March 13; s. Careless Earl 2300, d. Paley Mabel 9266 by Autocrat 2020.

1223 III. (£4).—W. A. THORNTON, Lock, Partridge Green, for Darkey 8th of Lock 12690, born Jan. 5; s. Tutsham Toreador 2018, d. Darkey A of Lock 11067 by Prince of Drungewick 3rd 1810.

1220 E. N. & H. C.—SIR HENRY BELL, BT., Mynthurst, Leigh, Reigate, for Rochester Daisy 2nd.

Class 143.—*Sussex Heifers, calved in 1910.* [11 entries, none absent.]

1236 I. (£15).—W. A. THORNTON, Lock, Partridge Green, for Lock Betsy 13326, born Jan. 5; s. Tutsham Toreador 2018, d. Betsy 4th of Lock 11562 by Prince of Drungewick 3rd 1810.

1233 II. (£6).—GEORGE S. HARRIS, Hylands, Hailsham, for Perfection of Hylands 13063, born Jan. 2; s. Shillinglee Gold 5th 2337, d. Apsley Perfection 11272 by Albert 2nd.

1227 III. (£4).—JOHN AUNGIER, Lynwick, Rudgwick, for Lynwick Lovely 12770, born Jan. 15; s. Masterpiece 2330, d. Lamehurst Lovely 26th 10630 by Prince of Ticehurst 1750.

1226 IV. (£3).—JOHN AUNGIER, for Lynwick Anemone 1st 12757, born Jan. 1; s. Masterpiece 2330, d. Anemone 10468 by Friars Preston 2068.

1228 E. N. & H. C.—JAMES BUCHANAN, Lavington Park, Petworth, for Lavington Lillypop.

Welsh.²

Class 144.—*Welsh Bulls, calved on or after December 1, 1905, and before December 1, 1909.* [4 entries, 1 absent.]

1238 I. (£10).—SIR C. G. ASSHETON SMITH, BT., Vaynol, Bangor, North Wales, for Wern Goalkeeper 333, born May 20, 1907, bred by R. M. Greaves, Wern, Portmadoc; s. Wern Defender 45, d. Wern Bilberry 135 by Wern Cawr 42.

1239 II. (£6).—R. M. GREAVES, Wern, Portmadoc, for Wern Inky 338, born March 20, 1909; s. Duke of Wellingthorpe 294, d. Molteno 395 by Mafeking 460.

1237 E. N. & H. C.—SIR C. G. ASSHETON SMITH, BT., for Manol.

¹ Champion Silver Medal given by the Sussex Herd Book Society for the best Cow or Heifer in Classes 141-143.

² £10 10s. towards these Prizes were given by the Welsh Black Cattle Society.

Award of Live Stock Prizes at Norwich, 1911. lxxvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 145.—Welsh Bulls, calved on or after December 1, 1909, and before December 1, 1910. [3 entries, 1 absent.]

1241 I. (£10).—THE COED COCH TRUSTEES, Llawes-y-Coed Farm, Abergelle for Rheinhall, born Aug. 28, 1910, bred by the University College of North Wales, Bangor; s. Madryn Madoc 297, d. Madryn Sally 595 by Black Bear 390 N.W.

1242 II. (£6).—R. M. GREAVES, Wern Portmadoc, for Wern Joker, born March 20, 1910; s. Duke of Wellington 294, d. Glasfryn Grace 645 by Wern Plum 467 N.W.

Class 146.—Welsh Cows or Heifers (in-milk), calved before December 1, 1908 [3 entries]

1216 I. (£10).—COL HENRY PLATT, C.B., Gorrddinog, Llanfairfechan, for Penmynydd Gwenllan 1087, born Sept. 10, 1905, calved June 3, 1911, bred by W. Owen, Penmynydd Valley, Anglesey; s. Penmynydd Arthur 112, d. Penmynydd Meirion 420.

1245 II. (£6).—COL HENRY PLATT, C.B., for Penmynydd Gwen 1085, born July 19, 1905, calved April 1, 1911, bred by W. Owen, Penmynydd Valley, Anglesey; s. Penmynydd Arthur 112, d. Penmynydd Olwen 422.

1244 R. N. & H. C.—R. M. GREAVES, Wern, Portmadoc, for Wern Honesty.

Class 147.—Welsh Heifers, calved on or after December 1, 1908, and before December 1, 1910. [4 entries, none absent]

1248 I. (£10).—R. M. GREAVES, Wern, Portmadoc, for Wern Ithex 1007, born June 21, 1909; s. Duke of Wellington 294, d. Modder 401 by Mateking 460

1250 II. (£6).—LORD ST. DAVID'S Lydstep Haven, Penallt, for Sarah 7th, born Jan. 2, 1910, bred by the late T. F. Thomas, Trebale, Mathrey, R.S.O.; s. Hendre Boy, d. Sarah 6th 1174 by (Orpyg Lad 805.

1249 R. N. & H. C.—R. M. GREAVES, for Wern Ideal.

Red Polls.¹

Class 148.—Red Poll Bulls, calved in 1906, 1907, or 1908.

[9 entries, none absent.]

1255 I. (£10, & Champion.²).—LORD CRANWORTH, Letton, Shipdham, for Letton Vanity Davyson 9819, born April 17, 1907; s. Davyson 265th 9230, d. Vanity 20151 by Nelson

1256 II. (£6, & R. N. for Champion.²).—HERBERT HAMMOND, Field Dalling, Holt, for Letton Rose's Davyson 9817, born May 18, 1907, bred by Lord Cranworth, Letton, Norfolk; s. Davyson 265th 9230, d. Bunch of Roses 2nd 19654 by Nelson 7404

1253 III. (£4).—THE TRUSTEES OF THE LATE SIR WALTER CORBET, BT., Acton Reynold, Shrewsbury, for Acton Corvus 9879, born March 24, 1908, bred by the late Sir Walter Corbet, BT.; s. Acton Merlin 9657, d. Desiree of Johnstown 10483 by Starston Ruler 5898.

1259 IV. (£3).—GEORGE HOLT WILSON, Redgrave, Diss, for Benaere Pearl 9910, born May 15, 1908, bred by Sir Thomas V. S. Gooch, BT., Benacre Hall, Wrentham; s. Darius 9403, d. Wondrous Pear 14408 by Sweet Lad 3321

1261 R. N. & H. C.—JOHN B. CHEVALIER, Aspall Hall, Dobenhams, for Acton Dairyman.

Class 149.—Red Poll Bulls, calved in 1909 [14 entries, none absent.]

1270 I. (£10).—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for Red David 10069 born Jan. 17; s. Redskin 9821, d. Davy 258rd 18713 by Majolito 3600.

1268 II. (£6).—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for Crown Imperial 10013, born Aug. 31, bred by G. H. Wilson, Redgrave, Diss; s. Starston Emperor 9335, d. Pretty Flower 3rd 19975 by Red Lord 5820.

1273 III. (£4).—GEORGE HOLT WILSON, Redgrave, Diss, for Prince Charming 10068, born July 29; s. Starston Emperor 9335, d. Charming Davy 4th 19668 by Red Lord.

1267 IV. (£3).—LORD CRANWORTH, Letton, Shipdham, for Letton Vanity Davyson 5th 10052, born April 18; s. Letton Vanity Davyson 9819, d. Omega 2nd 19957 by Marquis Blush 9128.

1262 R. N. & H. C.—THE TRUSTEES OF THE LATE SIR WALTER CORBET, BT., for Acton Falcon.

Class 150. Red Poll Bulls, calved in 1910 [21 entries, 2 absent.]

1276 I. (£10).—THOMAS BROWN & SON, Marham Hall, Downham Market, for Prebend 10216, born Feb. 4; s. Davyson 244th 9059, d. Prima 20487 by Fitzgerald 8956.

1283 II. (£6).—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for Honingham Alderman, born Jan. 3; s. Stronsham Purple Emperor 10095, d. Honingham Annette 20753 by Davyson 262nd 9228

¹ £40 towards these Prizes were given by the Red Poll Cattle Society, and £21 by the Norwich Local Committee.

² Champion Prize of £5 given by the Red Poll Cattle Society for the best Bull in Classes 148-150.

lxxviii *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1285 III. (£4.)—THE MARCHIONESS OF GRAHAM, Haslem Park, Wickham Market, for King David 10188, born April 5; s. Davyson 265th 9230, d. Davy 204th 16117 by Majolini 3600.
 1278 IV. (£3.)—LORD CRANWORTH, Letton, Shipdham, for Letton Admiral 10189, born March 17; s. Dalling Davyson 3rd 9787, d. Judith 2nd 20423 by Marquis Blush 9128.
 1287 V. (£3.)—THE MARCHIONESS OF GRAHAM, for Yalu 10251, born Feb. 3; s. Lionel 9711, d. Mimosa 20796 by Jupiter Tonans 8972.
 1281 R. N. & H. C.—LORD CRANWORTH, for Letton Royal.

Class 151.—Red Poll Cows (in-milk), calved in or before 1907.

[34 entries, 5 absent.]

- 1311 I. (£10, & Champion.¹)—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for Chedda 19075, born Oct. 7, 1903, calved May 5, 1911, bred by Arthur James, Coton House, Rugby; s. Admiral Popoff 8910, d. Cheese 3rd 14653 by Marquis 4518.
 1317 II. (£6, & R. N. for Champion.¹)—LORD HASTINGS, Melton Constable Park, Norfolk, for Majmag 2043, born April 21, 1905, calved Oct. 13, 1910; s. Meli 9265, d. Magnolia 17063 by Risk 5839.
 1309 III. (£4.)—LORD CRANWORTH, Letton, Shipdham, for Judith 2nd 20423, born April 16, 1905, calved Feb. 13, 1911; s. Marquis Blush 9128, d. Judith 18683 by Prince Rupert 8590.
 1326 IV. (£3.)—GEORGE HOLT WILSON, Redgrave, Diss, for Charming Davy 5th 19609, born May 3, 1904, calved April 26, 1911; s. Red Lord 8820, d. Charming Davy 3rd 14646 by Jabez Balfour 4448.
 1310 V. (£3.)—LORD CRANWORTH, for Kitty Grey 18695, born Nov. 12, 1901, calved Dec. 22, 1910, bred by the late T. W. Gaze, Diss; s. Ensign 7052, d. Kilkie 13692 by Wanderer 5252.
 1327 R. N. & H. C.—GEORGE HOLT WILSON, for Charming Davy 6th.

Class 152.—Red Poll Heifers (in-milk), calved in 1908.

[9 entries, 2 absent.]

- 1332 I. (£10.)—LORD CRANWORTH, Letton, Shipdham, for Letton Domino 2nd 21700, born July 28, calved Dec. 31, 1910; s. Davyson 265th 9230, d. Pink Domino 18223 by Sirdar 8677.
 1335 II. (£6.)—THE RT. HON. SIR AILWYN E. FELLOWES, K.C.V.O., Honingham Hall, Norwich, for Athens 21540, born April 19, calved Jan. 17, 1911; s. Honingham Auster 9704, d. Ada 13113 by The Pope 4581.
 1337 III. (£4.)—G. DUDLEY SMITH, Strensham Court, Worcester, for Crackle 31610, born April 11, calved Jan. 21, 1911; s. Nelson 9285, d. Ashlyn Sybil 2nd 9112 by Charity Boy 2647.
 1329 IV. (£3.)—THOMAS BROWN & SON, Marham Hall, Downham Market, for Flash 21651, born Aug. 3, calved Jan. 19, 1911; s. Davyson 244th 9050, d. Frolic 18631 by Westworth 5257.
 1336 R. N. & H. C.—LORD HASTINGS, Melton Constable Park, for Melton Countess.

Class 153.—Red Poll Heifers, calved in 1909. [24 entries, 1 absent.]

- 1345 I. (£10.)—LORD CRANWORTH, Letton, Shipdham, for Letton Judith 2nd B 22647, born Jan. 21; s. Letton Davyson 1st 9709, d. Judith 2nd 20423 by Marquis Blush 9128.
 1360 II. (£6.)—GEORGE HOLT WILSON, Redgrave, Diss, for Charming Davy 13th 22037, born March 23; s. Starston Emperor 9335, d. Charming Davy 5th 19609 by Red Lord.
 1346 III. (£4.)—LORD CRANWORTH, for Letton Rose 3rd A 22164, born March 13; s. Letton Davy Davyson 9812, d. Bunch of Roses 3rd 20660 by Redskin 9177.
 1359 IV. (£3.)—GEORGE HOLT WILSON, for Charming Davy 12th 22036, born Jan. 16; s. Starston Emperor 9335, d. Charming Davy 3rd 14646 by Jabez Balfour 4448.
 1350 V. (£3.)—HERBERT HAMMOND, Field Dalling, Holt, for Dalling Davy 17th 22081, born June 3; s. Davyson 305th 9687, d. Davy 324th 20703 by Majolini 3600.
 1349 R. N. & H. C.—HERBERT HAMMOND, for Dalling Davy 16th.

Class 154.—Red Poll Heifers, calved in 1910. [21 entries, 1 absent.]

- 1366 I. (£10.)—SIR RICHARD COOPER, BT., Ashlyns Hall, Berkhamsted, for Ashlyns Flora 22413, born Jan. 3; s. Ashlyn's Duke 9528, d. Ashlyn's Folly 16131 by Mayabala.
 1380 II. (£6.)—GEORGE HOLT WILSON, Redgrave, Diss, for Charming Davy 15th 22494, born March 23; s. Starston Emperor 9335, d. Charming Davy 5th 19609 by Red Lord.
 1375 III. (£4.)—SIR EUSTACE GURNEY, Sprowston Hall, Norwich, for Eriseis 22470, born Feb. 6; s. Sardanapalus 9962, d. Bridge 20230 by Recruit 8994.
 1369 IV. (£3.)—LORD CRANWORTH, Letton, Shipdham, for Letton Russett 2nd 22653, born Feb. 19; s. Roman 9854, d. Russett 20927 by Jupiter Tonans 8972.
 1379 R. N. & H. C.—ALFRED J. SMITH, Rendlesham, for Rendlesham Royal Judy.

¹ Champion Prize of £5 given by the Red Poll Cattle Society for the best Cow or Heifer in Classes 151-154.

Award of Live Stock Prizes at Norwich, 1911. lxxix

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 155.—Milk Yield Prizes, open to Red Poll Cows and Heifers entered in Classes 151 and 152 only. [25 entries, 2 absent.]

- 1315 I. (£10.)—THE MARCHIONESS OF GRAHAM, Easton Park, Wickham Market, for Retreat 19481, born Dec. 30, 1901, calved April 24, 1911, bred by the Trustees of the late Duke of Hamilton, Easton Park; s. Bismarck 6004, d. Jewess 10380 by Minotaur 2830.
 1328 II. (£6.)—GEORGE HOLT WILSON, Redgrave, Diss, for Freckles 4th 19774, born Oct. 19, 1903, calved May 10, 1911; s. Red Lord 5820, d. Freckles 2nd 14968 by Jaber Balfour 1448.
 1305 III. (£4.)—KENNETH M. CLARK, Sudbourne Hall, Orford, for Sudbourne Sadie 1st 20884, born April 18, 1906, calved April 21, 1911, bred by H. G. Walne, Kettleburgh, Suffolk; s. Standard Bearer 9331, d. Kettleburgh Ruby 6th 13691 by Newbourn
 1323 R. N. & H. C.—ALFRED J. SMITH, Rendlesham, for Rendlesham Pear Blossom.

Aberdeen Angus.¹

Class 156.—Aberdeen Angus Bulls, calved on or after December 1, 1905, and before December 1, 1908. [11 entries, 3 absent.]

- 1389 I. (£10, Champion, & R. N. for Champion.)—GEORGE J. DRUMMOND, Swaylands, Ponsburst, for Wildgrave of Ballindalloch 27653, born Dec. 28, 1906, bred by the late Sir J. Macpherson Grant, Bt., Ballindalloch; s. Everard of Ballindalloch 21902, d. Wild Berginmol 37431 by Delamere 13305
 1390 II. (£6.)—JAMES W. H. GRANT, Wester Elchies, Aberlour, for Earl Elgin of Ballindalloch 27887, born Dec. 6, 1907, bred by the late Sir J. Macpherson Grant, Bt., Ballindalloch; s. Jeshurun 19257, d. Elvan Erica 37422 by Delamere 13305.
 1386 III. (£4.)—ANDREW BROOKS, North Elphinstone, Tranent, East Lothian, for Periodical of Glamis 28457, born Dec. 31, 1907, bred by the Earl of Strathmore, Glamis Castle; s. Hooligan of Glamis 25732, d. Perone of Cortachy 34087 by Judex of Glamis 16722.
 1383 IV. (£3.)—HIS MAJESTY THE KING, Abergeldie Mains, Ballator, for Gruinard 28118, born Jan. 17, 1908, bred by J. R. Findlay, Aberlour House, Aberlour; s. Blizzard 24175, d. Grace of Aberlour 38900 by Alick of Aberlour 12231.
 1391 R. N. & H. C.—GEORGE HOYLES, Skidby Manor, Hull, for Proud Monarch 3rd of Skidby.

Class 157.—Aberdeen Angus Bulls, calved on or after December 1, 1908, and before December 1, 1909. [8 entries, none absent.]

- 1394 I. (£10, & R. N. for Champion.)—LORD ALLENDALE, Bywell Hall, Northumberland, for Elmhore 29122, born March 31, 1909, bred by His Majesty King Edward VII, Abergeldie Mains; s. Elcanar of Ballindalloch 24530, d. Elina of Abergeldie 23728 by Eulenber 10825.
 1401 II. (£6.)—D. Y. STEWART, Carse of Trowan, Crieff, for Prince Blueblood of Ballindalloch 29807, born Jan. 24, 1909, bred by Sir G. Macpherson Grant, Bt., Ballindalloch; s. Eldensor 23081, d. Pride of Bluefolds 33771 by Eblite 14306.
 1398 III. (£4.)—G. D. FABER, C.B., M.P., Rush Court, Wallingford, for Eligible o. Ballindalloch 29108, born March 24, 1909, bred by the late Sir J. Macpherson Grant, Bt., Ballindalloch; s. Jeshurun 19257, d. Elquin 35802 by Delamere 13305.
 1395 R. N. & H. C.—T. H. BAINBRIDGE, Eshott Hall, Felton, for Enca of Eshott.

Class 158.—Aberdeen Angus Bulls, calved on or after December 1, 1909, and before December 1, 1910. [10 entries, 2 absent.]

- 1411 I. (£10.)—WALTER A. SANDEMAN, Morden House, Royston, for Isomar of Morden 30896, born Dec. 14, 1909; s. Prince Fortune of Ballindalloch 28549, d. Isoline 56372 by Mailbag 13637.
 1403 II. (£6.)—H. L. C. BRASLEY, M.P., Apethorpe Hall, Wansford, for Ito 30697, born Dec. 29, 1909, bred by J. Kennedy, Doonholm, Ayr; s. Mondello 27193, d. Idiom 29052 by Mailbag 13637.
 1404 III. (£4.)—ANDREW BROOKS, North Elphinstone, Tranent, East Lothian, for Boxer of Moncur 30245, born March 5, 1910, bred by Messrs. White, Moncur, Inchture; s. Baron Hayston 24124, d. Gem 3rd of Moncur 43070 by Baron Hayston 24124.
 1402 IV. (£3.)—THE REV. C. BOLDEN, Preston Bissett, Buckingham, for Eloro 30415, born March 10, 1910, bred by J. Kennedy, Doonholm, Ayr; s. Elvarra 20507, d. Eruca 34049 by Mailbag 13637.

¹ £25 towards these Prizes were given by the Aberdeen Angus Cattle Society, and £5 through the Norwich Local Committee.

² Gold Medal given by the English Aberdeen Angus Cattle Association for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society in Classes 156-161.

³ Gold Medal given by the Aberdeen Angus Cattle Society for the best animal in Classes 156-161.

lxxx *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 159.—Aberdeen Angus Cows or Heifers (in-milk), calved before December 1, 1908. [11 entries, 2 absent.]

- 1422 I. (£10, & Champion.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for *Juanista Erica* 44037, born March 20, 1908, calved Jan. 21, 1911; s. Prince of the Wassail 23751, d. Juana Erica 30285 by Premier of Finlaring 17039.
 1416 II. (£6.)—SIR GEORGE A. COOPER, BT., Hursley Park, Winchester, for *Crocus of Standen* 37038, born April 20, 1904, calved April 18, 1911, bred by Capt. F. Cookson, Standen House, Andover; s. Elberton 20435, d. Daisy of Standen 31539 by Rosy King of Teddold 14937.
 1419 III. (£4.)—GEORGE J. DRUMMOND, Swaylands, Pen-hurst, for *Beretta 2nd of Swaylands* 41950, born Jan. 13, 1907, calved Jan. 30, 1911; s. Elboniser 21782, d. Beretta of Addington Park 31099 by Kilgraston 15610.
 1412 IV. (£3.)—T. H. BAINBRIDGE, Eshott Hall, Felton, for *Tuberose of Standen* 43477, born Jan. 8, 1908, calved Feb. 2, 1911, bred by Capt. F. Cookson, Standen House, Andover; s. Elector of Benton 21814, d. Rose of Standen 28005 by Justinhaugh 13550.
 1420 R. N. & H. C.—G. D. FABER, C.B., M.P., Rush Court, Wallingford, for *Gay Favourite of Haynes*.

Class 160.—Aberdeen Angus Heifers, calved on or after December 1, 1908, and before December 1, 1909. [6 entries, none absent.]

- 1424 I. (£10.)—T. H. BAINBRIDGE, Eshott Hall, Felton, for *Belinda of Clury* 45451, born March 1, 1909, bred by G. Grant, Clury, Grantown-on-Spey; s. Prince Festive of Ballindalloch 26188, d. Belinda of Laggan 40574, by Edelhof 20416.
 1423 II. (£6.)—HIS MAJESTY THE KING, Abergeldie Mains, Ballater, for *Gwyf* 14700, born Dec. 19, 1908, bred by His Majesty King Edward VII.; s. Eleanor of Ballindalloch 24330, d. Gwytch 36895 by Elandslaagte 17745.
 1428 III. (£4.)—JOHN MCG. PETRIE, Glenlogie, Forbes, Aird, Aberdeenshire, for *Pride of Dublin* 45987, born Jan. 15, 1909; s. Metaphor 27181, d. Pride of Peobles 38075 by Elshender 18523.

Class 161.—Aberdeen Angus Heifers, calved on or after December 1, 1909, and before December 1, 1910. [15 entries, 3 absent.]

- 1431 I. (£10.)—T. H. BAINBRIDGE, Eshott Hall, Felton, for *Proud Grace of Eshott* 40552, born Jan. 14, 1910; s. Gerace of Ballindalloch 28100, d. Pride of Twyford 39094 by Idelamere 23036.
 1442 II. (£6.)—J. ERNEST KERR, Harviestoun Castle, Dollar, for *Juanessa Erica* 47425, born Feb. 27, 1910; s. Elect of Ballindalloch 25518, d. Juanita Erica 42362 by Prince of the Wassail 23751.
 1437 III. (£4.)—ANDREW BROOKS, North Elphinstone, Tranent, East Lothian, for *Erinna* 47243, born Jan. 8, 1910, bred by P. Grant, Hotel, Carrbridge; s. Prince Lord of Ballindalloch 27341, d. Ericargie 42246 by Colonel of Ardgare 24228.
 1435 IV. (£3.)—J. H. BRIDGES, Langhott, Horley, for *Eola of Morlich* 46837, born Feb. 3, 1910, bred by G. Cran, Morlich, Glenkindie; s. Eliano 16517, d. Elme of Morlich 40235 by Jeshurun 19257.
 1429 R. N. & H. C.—HIS MAJESTY THE KING, for *Gwendolin 2nd*.

Galloways.²

Class 162.—Galloway Bulls, calved on or after December 1, 1905, and before December 1, 1909. [4 entries.]

- 1446 I. (£10.) THOMAS GRAHAM, Craigs Farm, Dumfries, for *Marchfield Despised* 10149, born Jan. 2, 1906, bred by The Duke of Buccleuch, Drumlanrig Castle, Thornhill; s. Grandee 8449, d. Pride 28th of Drumlanrig 17371 by Earl of Annandale.
 1445 II. (£6.)—ROBERT GRAHAM, Auchengassel, Twynholm, for *War Boy of Craighouse* 10176, born Jan. 28, 1907, bred by W. & D. Wilson, Craighouse, Lockerbie; s. War Cry of Whitehill 9368, d. Nora of Craighouse 18508 by Woodland Prince 8772.
 1444 III. (£4.)—THOMAS BIGGAR & SONS, Chapelton, Dalbeattie, for *Sweepstake* 10001, born May 16, 1907, bred by Col. J. M. Kennedy, M.V.O., Milton Park, Dalby; s. Hall Mark 8441, d. Woodbine of Blaquhairn 16812 by Hugh of Locherkil 8440.
 1447 R. N. & H. C.—HENRY C. STEPHENS, Cholderton, Salisbury, for *Black Prince*.

Class 163.—Galloway Bulls, calved on or after December 1, 1909, and before December 1, 1910. [4 entries, 1 absent.]

- 1448 I. (£10.)—THOMAS BIGGAR & SONS, Chapelton, Dalbeattie, for *Kingsley* 11130, born Jan. 27, 1910, bred by W. A. McTurk, Barlac, Dalry; s. Lear 9941, d. Brownie of Barlac 18450 by Gladiator of Barsalloch 7934.
 1451 II. (£6.)—ROBERT GRAHAM, Auchengassel, Twynholm, for *Minor of Auchengassel* 11187, born April 2, 1910; s. War Boy 10176, d. Empire Hallmark 19164 by Hallmark.
 1450 III. (£4.)—ROBERT GRAHAM, for *Masterkey of Auchengassel* 11165, born April 1, 1910; s. War Boy 10176, d. Corty of Kirkconnel 16505 by Gav Stanley 7122.

¹ Gold Medal given by the Aberdeen Angus Cattle Society for the best animal in Classes 156-161.

² £16 towards these Prizes were given by the Galloway Cattle Society.

Award of Live Stock Prizes at Norrich, 1911. lxxxi

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 164.—Galloway Cows or Heifers (in-milk), calved before December 1, 1908. [3 entries.]

- 1453 I. (£10.)—ROBERT GRAHAM, Auchengassel, Twynholm, for Our Sally 18074, born April 1, 1901, calved March 22, 1911, bred by H. B. Lane, Rust Hall, Ireland; s. Brucina 3rd of Drumlanrig 8045, d. Scottish Sally 17159 by Scottish Standard 7377.
 1452 II. (£6.)—A. H. FOX-BROCKBANK, The Croft, Kirksanton, for Clara 11th of Tundergarth Mains 19111, born Jan. 13, 1906, calved Feb. 4, 1911, bred by J. Wilson, Tundergarth Mains, Lockerbie; s. Woodland Prince 8772, d. Clara 3rd 18479 by MacDougall of Naworth 6990.
 1454 III. (£4.)—THOMAS GRAHAM, Craigs Farm, Dumfries, for Louisa 8th of Tarbreoch 21125, born Feb. 7, 1908, calved April 16, 1911, bred by J. Cunningham, Tarbreoch, Dalbeattie; s. Chancellor 9010, d. Louisa 5th of Tarbreoch 18418 by Lord William.

Class 165.—Galloway Heifers, calved on or after December 1, 1908, and before December 1, 1910. [4 entries, 1 absent.]

- 455 I. (£10.)—THOMAS BIGGAR & SONS, Chapelton, Dalbeattie, for Lizzie 4th of Chapelton 21854, born Dec. 8, 1909; s. Sweepstakes 10001, d. Lizzie 2nd of Chapelton 19464 by Lord William 7108.
 1456 II. (£6.)—A. H. FOX-BROCKBANK, The Croft, Kirksanton, for Nightingale of Mosknos 21916, born Feb. 4, 1910, bred by Lewis Beattie, Mosknos, Canonbie; s. Glad Mark 10275, d. Moth of Mosknos 19631 by Wanderer 9460.
 1458 III. (£4.)—ROBERT GRAHAM, Auchengassel, Twynholm, for Lilac of Auchengassel 21006, born April 2, 1909; s. War Boy 10176, d. Rose of Blackcombe 18716 by Clansman 7916.

Highland.

Class 166.—Highland Bulls, calved in or before 1910. [2 entries.]

- 1459 I. (£10.)—KENNETH McDOVALL, Logan, Ardwell, Stranraer, for Carrich Dornhull Moleach of Logan, branded, born April 14, 1910; s. Fear A' Bhaia of Athol 1819, d. Princess Violet 6874 by Calum Rnabach 2nd of Athol 1325.
 1460 E. N. & H. G. KENNETH McDOVALL, for Carrich Tan of Logan.

Class 167.—Highland Cows or Heifers (in-milk). [1 entry.]

- 1461 I. (£10.)—KENNETH McDOVALL, Logan, Ardwell, Stranraer, for Carrich Aimey 7814, silver dun, born April 19, 1907, calved April 4, 1911; s. Calum Buidhe 3rd of Athol 2116, d. Bell 8th of Taymouth 6843 by Beinn Tadam 1445.

Ayrshires.¹

Class 168.—Ayrshire Bulls, calved in or before 1910. [4 entries, 1 absent.]

- 1465 I. (£10.)—JAMES HOWIE, Hillhouse, Kilmarnock, for Howie's Ayr Review 8148, brown and white, born March 1, 1909, bred by the Messrs Muir, Craigbrae, Dronnan; s. Knockmurrnan Hopeful 7207, d. Craigbrae Midway 23154.
 1463 II. (£6.)—JAMES HOWIE, for Bras Rising Star 8187, white, born April 12, 1909, bred by R. Woodburn, Whitehill, Hurlford; s. Envy Me 7027, d. Whitehill Lily 2nd 17511 by Traveller Again of Iloehouse 4561.
 1464 III. (£4.) JAMES HOWIE, for Howie's Auristocrat 8762, white and brown, born Feb. 20, 1910, bred by J. Slater, Grange, Kirkcudbright; s. Orange Wildfire.

Class 169a.—Ayrshire Cows or Heifers (in-milk). [12 entries, 2 absent.]

- 1472 I. (£10.)—W & J. KERR, Old Graitney, Graitney, Carlisle, for Dewdrop 1st of Old Graitney 14283, red and white, born Jan., 1898, calved June 1, 1911, bred by Messrs. A. & W. Kerr; s. Lord Bute of Old Graitney 3809, d. Dewdrop of Old Graitney.
 1470 II. (£6.)—LIEUT.-COL. FERGUSON-BUCHANAN, Auchentorlie, Bowling, for Gardrum Buby, white and brown, born 1903, calved June 7, 1911, bred by M. Wallace, Hill Farm, Ochiltree; s. Hill Earl, d. Kirkland Ruby.
 1474 III. (£4.)—W & J. KERR, for Old Graitney Fairy 21006, red and white, born April, 1905, calved June 7, 1911, bred by A. & W. Kerr; s. Old Graitney Squire 5178, d. Old Graitney Fairylife 17604 by Bright Lad of Knockdon.
 1467 E. N. & H. G.—ALEXANDER CROSS, Knockdon, Maybole, for Knockdon Poverty.

Class 169b.—Ayrshire Cows or Heifers (in-calf).

- 1466 I. (£10.)—ALEXANDER CROSS, Knockdon, Maybole, for Knockdon Bloomer 2nd 23098, brown and white, born March 13, 1908; s. Sir John of Old Graitney 4035, d. Blooming Heather 6th of Knockdon 13311 by Yellow Squire of Castlehill 2912.
 1469 II. (£6.)—LIEUT.-COL. FERGUSON-BUCHANAN, Auchentorlie, Bowling, for Auchentorlie Calla, black and white, born Sept. 20, 1908; s. Auchentorlie Sir Douglas 8215, d. Auchentorlie Blackie.

¹ £20 towards these Prizes were given by the Ayrshire Cattle Herd Book Society.

lxxxii *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 170.—*Milk Field Prizes, open to Ayrshire Cows and Heifers entered in Class 169a only.* [7 entries, 2 absent.]

1476 I. (£10).—WILLIAM NISBET, Lordship, Hinxton, Great Chesterford, Essex, for Dalfibble Daisy Belle 18961, black and white, born Dec. 23, 1900, calved March 20, 1911, bred by John Mackie, Dalfibble Park Gate, Dumfries; s. Knockdon of Sarkshields 3725, d. Tibbie of Dalfibble 13233

1476 II. (£6).—WILLIAM NISBET, for Dalfibble Bella 2nd 19054, brown and white, born Sept. 27, 1901, calved April 20, 1911, bred by J. Mackie, Dalfibble Park Gate, Dumfries; s. Tommy of Dalfibble 4886, d. Dalfibble Bella.

1470 III. (£4).—LIEUT.-COL. FERGUSON-BUCHANAN, for Gardrum Ruby. (See Class 169a.)

1472 B. N. & H. C.—W. & J. KERR, for Dewdrop 1st of Old Graitney.

British Holsteins.¹

Class 171.—*British Holstein Bulls, calved in 1909 or 1910.*

[4 entries.]

1480 I. (£10).—MISS ALICE DEBENHAM, Payables House, Woodcote, Oxon, for Woodcote Andrew, black and white, born July 26, 1910; s. Woodcote Pioneer 206, d. Woodcote Prunella 1811.

1478 II. (£6).—ARTHUR S. BOWLBY, Gilston Park, Harlow, for Gilston Felix, black and white, born March 14, 1910; s. Gilston Jack, d. Gilston Phyllis.

1479 III. (£4).—A. & J. BROWN, Hedges Farm, St. Albans, for Colton Chamberlain, black and white, born Aug. 20, 1910, bred by H. Brown, Colton Main, Dunfermline; s. Colton Queen's Own 24, d. Colton Pride 181.

1481 R. N. & H. C.—ERNEST H. FORWOOD, Bendrose Grange, Amersham, for Bendrose Duke 2nd.

Class 172.—*British Holstein Cows or Heifers (in-milk), calved in or before 1908.*
[3 entries, 1 absent.]

1484 I. (£10).—C. H. WESTROFF, Melford Place, Long Melford, Suffolk, for Melford Eva 823, dun and white, born in 1905, calved April 10, 1911.

1482 II. (£6).—JOHN BROMET, Golf Links Farm, Tadcaster, for Park Lothian 957, black and white, born in 1904, calved Feb., 1911, bred by H. O. Ford, Wheatley Park, Doncaster.

Class 173.—*British Holstein Heifers, calved in 1909 or 1910.*

[6 entries, none absent.]

1488 I. (£10).—ADAM SMITH, JUN., Lochlands, Larbert, for Lochlands Madge 724, black and white, born Oct. 17, 1909; s. Lochlands Hugo 92.

1487 II. (£6).—MISS ALICE DEBENHAM, Payables House, Woodcote, Oxon., for Woodcote Alpha, black and white, born July 24, 1910; s. Woodcote Pioneer 206, d. Woodcote Patsy 1599.

1489 III. (£4).—G. P. SMITHSON, West Oclandon, Guildford, for Park Maggie 950, black and white, born Feb. 26, 1909, bred by H. O. Ford, Wheatley Park, Doncaster s. Park General Botha 186, d. Park Lothian 957.

1490 R. N. & H. C.—C. H. WESTROFF, Long Melford, for Melford Buttercup.

Class 174.—*Milk-Field Prizes, open to British Holstein Cows and Heifers entered in Class 173 only.* [2 entries, 1 absent.]

[No Award.]

Jerseys.²

N.B.—In the Jersey Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Island Herd Book. A number without brackets indicates that the animal is registered in the English Jersey Herd Book.

Class 175.—*Jersey Bulls, calved in 1906, 1907, or 1908.*

[12 entries, 4 absent.]

1498 I. (£10, Champion,* & Special.†)—A. MILLER-HALLETT, Goddington, Chislehurst, Kent, for Goddington Winks, broken colour, born July 31, 1908; s. Honest Lad 8379, d. Young Winks 4th (vol. 20, p. 459) by Flowers Hero 8515.

¹ £30 towards these Prizes were given by the British Holstein Cattle Society.
² £30 towards these Prizes were given by the English Jersey Cattle Society.
³ Champion Prize of £5 given by the English Jersey Cattle Society for the best Bull in Classes 175-177.

⁴ Special Prize of £10 10s. given by the Royal Jersey Agricultural Society for the best Bull in Classes 175-177, provided its dam has won a prize or certificate of merit in any Butter Test Competition recognised by the English Jersey Cattle Society.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 1500 II. (£6, & R. N. for Champion.) LORD ROTHSCHILD, Tring Park, Herts., for Duke of Kent 9841, whole colour, born April 30, 1908; s. Noble of Oaklands 9366, d. Kenta by General Fox 2nd 8889.
 1502 III. (£4.)—SIR EDWARD STERN, F in Court, Chertsey, for Golden Beam 9247, whole colour, born July 23, 1906, bred by J. H. Smith Barry, Stowell Park, Pewsey; s. Oxford Sunbeam 8650, d. Guelder Rose by Grouille Boy 6542.
 1498 IV. (£3.)—MRS. C. M. MCINTOSH, Havering Park, Romford, for Stormer 9431, dark fawn, born March 23, 1906, bred by Lord Rothschild, Tring Park, Herts; s. Frank Field's Jolly 8187, d. Syren 3rd by La Chasse Prince 5243.
 1494 R. N. & H. C.—DR. H. CORNER, Brook House, Southgate, for Lord Stockwell.

Glass 176.—Jersey Bulls, calved in 1909. [16 entries, 3 absent.]

- 1518 I. (£10.)—SIR JULIUS WERNHER, BT., Luton Hoo, Luton, for China's Fairy Boy 9840, whole colour, born April 14, bred by T. Le Marnel, St. John's, Jersey; s. Raleigh's Fairy Boy 9741, d. China Plate (1221) P.S.H.C. by Wonder's Lad 9468.
 1505 II. (£6.)—JOSEPH BRUTTON, 7 Princes Street, Yeovil, for Silver Stick, brown, born Feb. 3, bred by E. Cabot, St. Clements, Jersey; s. King Anemone 8955, d. Instructive (10670) P.S.H.C. by Dictator 8154.
 1509 III. (£4.)—CAPT. M. HILL, Westwood House, West Bergholt, Essex, for Crown Prince, black, born March 13, bred by Mrs. McIntosh, Havering Park, Romford, s. Jolly Jim 8581, d. Coronation (vol. 17, p. 237) by Grey Scot 4381.
 1508 IV. (£3.)—JERSEY DE KNOOP, Calveley Hall, Tarporley, for Derry's Jack, whole colour, born March 16, bred by E. Billot, St. Saviour's, Jersey; s. Derry's Golden Lad 8857, d. Bertha 2nd (1248) P.S.C. by Game Cock 8311.
 1506 V. (£3.)—RHODES H. COBB, The Grove, Esher, for Dark Ronald, broken colour, born May 24; s. Blue Blood 9503, d. Glory's Belle (vol. 18, p. 306) by Cowshp's Golden Lad 7768.
 1512 R. N. & H. C.—ARTHUR POOCK, Freegrove, Calne, Wilts., for Barrister's Reminder.

Glass 177.—Jersey Bulls, calved in 1910 [20 entries, 5 absent.]

- 1528 I. (£10.)—A. MILLER-HALLETT, Goddington, Cheshfield, Kent, for Goddington Noble 2nd, broken colour, born April 29; s. Goddington Winks, d. Goddington Bagatelle (vol. 20, p. 317) by Rover of Oaklands 8348.
 1521 II. (£6.)—EARL CADOGAN, K.G., Oulford Hall, Bury St. Edmunds, for Ironmaster, slightly broken, born April 9, bred by A. E. Le Blancq, St. Ouen's, Jersey; s. Iron-duke 9945, d. Gipsy Maid 2nd (9641) P.S.H.C. by Willow 7398.
 1534 III. (£4.)—LORD ROTHSCHILD, Tring Park, Herts., for Halley, whole colour, born April 4, bred by W. Alexander, St. Mary's, Jersey; s. Noble's Jolly Sultan 10022, d. Golden Queen 5th (14653) by Sultan of Oaklands 9082.
 1527 IV. (£3.)—MRS. C. M. MCINTOSH, Havering Park, Romford, for Bright Light, dark fawn, born April 2; s. Electric Spark, d. Bright Lustine by King Edward (3067).
 1526 V. (£3.)—JAMES JOCEY, Poulton Priory, Fairford, for Midsummer, whole colour, born May 25; s. Lord Alena 9972, d. Summer Glory (vol. 21, p. 129) by Netina's Dairy Lad 8637.
 1531 R. N. & H. C.—ARTHUR POOCK, Freegrove, Calne, Wilts., for Tweedledes.

Glass 178.—Jersey Cows (in-milk), calved in or before 1907. [38 entries, 7 absent.]

- 1564 I. (£10, & Champion.) LORD ROTHSCHILD, Tring Park, Herts., for Cuts 2nd (9072) P.S.C., whole colour, born March 18, 1900, calved May 15, 1911, bred by P. Quenault, St. Peter's, Jersey; s. Ohio 7142, d. Cuts (8574) P.S.H.C.
 1575 II. (£6, & R. N. for Champion.)—R. BRUCE WARD, Westwood, Droitwich, for Mrs. Viola (vol. 17, p. 367), fawn, born Aug. 1, 1900, calved May 8, 1911, bred by J. T. Dolbut, St. Lawrence, Jersey; s. Pomona's Glory 6488, d. Black Bess (9817) P.S.C. by King 8251.
 1566 III. (£4.)—LORD ROTHSCHILD, for Kenta (vol. 20, p. 346), whole colour, born March 6, 1905, calved May 5, 1911, bred by J. Grosvallet, St. Clements, Jersey; s. General Fox 2nd 8889, d. Pallas 2nd (9694) P.S.H.C. by Sovereign 7372.
 1580 IV. (£3.)—A. MILLER-HALLETT, Goddington, Cheshfield, Kent, for Honey Lass (18942) P.S.H.C., whole colour, born July 11, 1906, calved April 23, 1911, bred by H. Lawford, St. Brelade's, Jersey; s. Shy Lad (3779), d. Honey-moon 4th (11892) P.S. by Napoleon Bonaparte (2745).
 1542 V. (£3.)—JOSEPH BRUTTON, 7 Princes Street, Yeovil, for Irish Lass (vol. 18, p. 324), light brown, born Aug. 12, 1904, calved March 9, 1911, bred by Mrs. Spencer, Oakhill, Bath; s. Emerald 7797, d. Arcadia 2nd by Duke of Orleans 5808.
 1559 R. N. & H. C.—A. MILLER-HALLETT, for Goddington Vanilla.

¹ Champion Prize of £5 given by the English Jersey Cattle Society for the best Bull in Classes 176-177.

² Champion Prize of £5 given by the English Jersey Cattle Society for the best Cow or Heifer in Classes 178-181.

lxxxiv *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 179.—*Jersey Heifers (in-milk), calved in 1908.*

[13 entries, 3 absent.]

- 1587 I. (£10.)—**LORD ROTHSCHILD**, Tring Park, Herts., for *Mariposa's Lass*, whole, born Jan. 8, calved May 2, 1911, bred by A. P. Le Rossignol, St. Lawrence, Jersey; s. Plymouth Lad 9388, d. *Mariposa's Pet* (12889) P.S.C. by *Flowers Hero* 8516.
 1588 II. (£6.)—**ARTHUR POOCK**, Freegrove, Calne, Wilts., for *Easter Lily* (vol. 20, p. 102), whole fawn, born April 19, calved April 26, 1911; s. *Barrister* 8424, d. *Black Lily* by *Black Butter* 7731.
 1589 III. (£4.)—**A. MILLER-HALLETT**, Goddington, Chelsfield, Kent, for *Goddington Plaisanterie*, whole colour, born May 6, calved May 28, 1911; s. *Blue Sultan* 8806, d. *Plaisanterie* (vol. 18, p. 387) by *Nobleman* 6659.
 1579 E. N. & H. C.—**JOSEPH BRUTTON**, 7 Princes Street, Yeovil, for *Yeovil Lassie*.

Class 180.—*Jersey Heifers (in-milk), calved in 1909.*

[26 entries, 9 absent.]

- 1609 I. (£10.)—**LORD ROTHSCHILD**, Tring Park, Herts., for *Aster*, whole colour, born March 25, calved April 14, 1911; s. *Catillons Lad* 9182, d. *Ardath* (vol. 20, p. 248) by *Aboukir's Boy* 7406.
 1590 II. (£6.)—**CHARLES W. ARMITAGE**, Woodlands, Northaw, Herts., for *Fairy Fern*, fawn, born Feb. 1, calved Feb. 2, 1911, bred by A. Le Gros, St. Saviours, Jersey; s. *Raleigh's Fairy Boy* (3451), d. *Golden Fern's Queen* (8508).
 1602 III. (£4.)—**JAMES JOICEY**, Poulton Priory, Fairfield, for *Electric Queen*, whole colour, born Feb. 15, calved June 4, 1911; s. *Chief Justice* 7138, d. *Electric Flash* (vol. 15, p. 272) by *Flying Fox* 8859.
 1610 IV. (£3.)—**LORD ROTHSCHILD**, for *Java's Valentine*, whole colour, born Feb. 14, calved May 7, 1911, bred by P. Le Marchand, St. Mary's, Jersey; s. *Gulvanie's Champion* 9592, d. *Java* (8653) F.S.C.
 1604 V. (£3.)—**MRS. C. M. MCINTOSH**, Havering Park, Romford, for *Golden Rozel 2nd*, fawn, born July 9, calved June 6, 1911; s. *La Fosse Hero* 9303, d. *Golden Rozel* (vol. 20, p. 322) by *Wonder's Lad* 9408.
 1595 E. N. & H. C.—**FOWLER & DE LA PERRELLE**, Southampton, for *Golden Age 3rd*.

Class 181.—*Jersey Heifers, calved in 1910.* [16 entries, 1 absent.]

- 1620 I. (£10.)—**DR. H. CORNER**, Brook House, Southgate, London, N., for *Leo's Remembrance*, whole colour, born May 27; s. *Leo of Oaklands*, d. *Remember* (vol. 14, p. 342) by *Onumais Lad* 4497.
 1626 II. (£6.)—**LORD ROTHSCHILD**, Tring Park, Herts., for *New Year's Beauty*, whole colour, born Jan. 1, bred by W. O. Gruchy, Trinity, Jersey; s. *Royal Guide* (10077), d. *Sixty* (14517).
 1628 III. (£4.)—**G. MURRAY SMITH**, Gumley Hall, Market Harborough, for *Maiden's Wreath*, broken colour, born May 10; s. *Evergreen* 9903, d. *Bishopstow Maiden* (vol. 21, p. 250) by *Noble of Oaklands* 9368.
 1621 IV. (£3.)—**MRS. C. M. MCINTOSH**, Havering Park, Romford, for *Havering Primrose 5th*, fawn, born March 27; s. *Lockett's Golden Lad*, d. *Havering Primrose* (vol. 11, p. 258) by *Mount Pelier* 5294.
 1617 E. N. & H. C.—**EARL CADOGAN**, K.G., Culford Hall, Bury St. Edmunds, for *Noble Image*.

Class 182.—*Jersey Cows or Heifers (in-milk), bred by Exhibitor, and sired in Great Britain or Ireland. Open to Animals entered in Classes 178, 179, and 180 only.* [21 entries, 4 absent.]

- 1559 I. (£10.)—**A. MILLER-HALLETT**, Goddington, Chelsfield, Kent, for *Goddington Vanilla*, (vol. 20, p. 318), whole colour, born April 7th, 1906, calved May 19, 1911; s. *Lenten Fare* 8507, d. *Vanilla 2nd* by *Hobby* 7865.
 1554 II. (£6.)—**JAMES JOICEY**, Poulton Priory, Fairfield, Glos., for *Lily of the Valley* (vol. 21, p. 350), whole colour, born May 25, 1907, calved May 25, 1911; s. *Gloriosa* 9243, d. *Lilian* by *Sir Bredwell* 7889.
 1586 III. (£4.)—**ARTHUR POOCK**, for *Easter Lily*. (See Class 179.)
 1568 E. N. & H. C.—**G. MURRAY SMITH**, Gumley Hall, Market Harborough, for *Jewel*.

Class 183.—*Milk Yield Prizes, open to Jersey Cows and Heifers entered in Classes 178, 179, and 180 only.* [24 entries, 3 absent.]

- 1571 I. (£10.)—**J. H. SMITH-BARRY**, Stowell Park, Pewsey, Wilts., for *Post Obit* (vol. 18, p. 388), fawn, born March 23, 1904, calved Feb. 8, 1911; s. *Gay Boy* 7510, d. *Post Stamp 6th* by *Distinction's Crown* 4818.
 1570 II. (£6.)—**J. H. SMITH-BARRY**, for *Caprice* (vol. 20, p. 273), fawn, born July 28, 1905, calved Jan. 8, 1911; s. *Oxford Sunbeam* 8680, d. *Captious* by *Geonnis Lad* 6562.
 1566 III. (£4.)—**LORD ROTHSCHILD**, Tring Park, Herts., for *Triangle 2nd* (vol. 21, p. 438), broken colour, born December 18, 1905, calved March 11, 1911, bred by J. Barthele, St. Marys, Jersey; s. *Mourier King* 9705, d. *Triangle* (9579) P.S.C. by *Advancer* 8758.
 1565 E. N. & H. C.—**LORD ROTHSCHILD**, for *Kenta*.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Guernseys.¹

N.B.—Unless otherwise stated, the numbers refer to the English Guernsey Herd Book.

Class 184.—Guernsey Bulls, calved in 1906, 1907, 1908, or 1909.

[11 entries, 1 absent.]

- 1635 I. (£10).—SIR H. F. LENNARD, BT., Wickham Court, West Wickham, Kent, for Goldseeker 1831, fawn, born February 27, 1907, bred by the late Sir H. D. Tichborne, Bt., Tichborne Park, Alresford; s. Golden Secret 1569, d. Itchen Lily 1112 by Loyal of the Hunguets 978, P.S., R.G.A.S.
- 1641 II. (£8).—SIR JOSEPH H. B. D. TICHBORNE, BT., Tichborne Park, Alresford, for Itchen Red Raider 2042, fawn and white, born Nov. 6, 1908; s. Mo's Raider 1871, d. Itchen May Rose 4839 by Itchen Jewel 1113.
- 1631 III. (£4).—SIR EVERARD HAMBRO, K.O.V.O., Hayes Place, Hayes, Kent, for Guiding Star of Les Belles 2293, fawn and white, born Oct. 30, 1908, bred by W. J. Le Ruez, Le Bolles, St. Saviours, Guernsey; s. Golden Noble 2nd 1836 P.S., R.G.A.S., d. Fanny of Guelbort 4488 P.S., R.G.A.S.
- 1638 IV. (£3).—COLONEL H. W. SHAKERLEY, Enham Place, Andover, for Raymond of the Vrangue 2361, red, born June 13, 1909, bred by J. Sherwill, La Vrangue, St. Peter's Port, Guernsey; s. Raymond of the Preel 6th 1894 P.S., R.G.A.S., d. Nelly of the Vrangue 3577 P.S., R.G.A.S.
- 1636 R. N. & H. C.—J. PIERPONT MORGAN, Dover House, Roehampton, for Polo 3rd of the Vanxhelets.

Class 185.—Guernsey Bulls, calved in 1910. [11 entries, 1 absent.]

- 1643 I. (£10).—MRS. R. C. BAINBRIDGE, Elfordleigh, Plympton, for Raymonds Joe 2382, orange and white, born April 30, bred by J. Le Page, Neuve Maison, Castel, Guernsey; s. Raymond of the Preel 4th 1911, P.S., R.G.A.S., d. Bon Espoir 9th 4515 P.S., R.G.A.S.
- 1651 II. (£6).—J. PIERPONT MORGAN, Dover House, Roehampton, for Roehampton Comte de Paris 2nd 2364, fawn and white, born April 27; s. Clatford Comte de Paris 1912, d. Lily of the Preel 5532 by King Edward 1291 P.S., R.G.A.S.
- 1652 III. (£4).—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for Fleur-de-Lys 5th 2204, fawn and white, born June 15; s. Fleur-de-Lys 2nd 2017, d. Guinare 10th 7248 by Antonio 1733.
- 1618 R. N. & H. C.—SIR EVERARD HAMBRO, K.O.V.O., for Hayes Gay 2nd.

Class 186.—Guernsey Cows or Heifers (in-milk), calved in or before 1908.

[17 entries, 3 absent.]

- 1662 I. (£10).—J. PIERPONT MORGAN, Dover House, Roehampton, for Deanie 16th 7597 P.S., R.G.A.S., fawn and white, born July 14, 1907, calved June 14, 1911, bred by T. R. Gallienne, Pouchy, Castel, Guernsey; s. Galaxy's Sequel 1539 P.S., R.G.A.S., d. Deanie 12th 4699 P.S., R.G.A.S.
- 1659 II. (£6).—SIR EVERARD HAMBRO, K.O.V.O., Hayes Place, Hayes, Kent, for Hayes Olive 5833, fawn, born June 8, 1903, calved April 15, 1911; s. Merry Anton 1449, d. Olive Branch 5258 by Billy.
- 1656 III. (£4).—JOHN OARY FORSTER, Clatford Mills, Andover, for Ma Charmante 2nd 4891, red and white, born June 2, 1899, calved May 18, 1911, bred by J. Bourgaize, The Iron, St. Saviours, Guernsey; s. His Majesty 1106 P.S., R.G.A.S., d. Ma Charmante 4490 by Archibald 442 P.S., R.G.A.S.
- 1660 IV. (£3).—SIR H. F. LENNARD, BT., Wickham Court, West Wickham, Kent, for Lady No. 91 7394, red and white, born May 18, 1907, calved April 18, 1911; s. Hanbury 1668, d. Lady No. 77 4134 by Lord Rowse 801.
- 1661 R. N. & H. C.—SIR H. F. LENNARD, BT., for Wickham Fancy 2nd.

Class 187.—Guernsey Heifers, calved in 1909. [4 entries, 1 absent.]

- 1673 I. (£10).—SIR H. F. LENNARD, BT., Wickham Court, West Wickham, Kent, for Wickham Puppy 3rd 8302, fawn and white, born Feb. 11; s. Goldseeker 1831, d. Wickham Puppy 7135 by Hanbury 1669.
- 1674 II. (£8).—SIR JOSEPH H. B. D. TICHBORNE, BT., Tichborne Park, Alresford, for Itchen Belle 10th 1100, fawn and white, born May 18; s. Hayes Coronation 3rd 1936, d. Itchen Belle 9th 7310 by Golden Secret 1569.
- 1671 R. N. & H. C.—W. H. N. GOSCHEN, Durrington House, Harlow, for Durrington Cowslip.

Class 188.—Guernsey Heifers, calved in 1910. [18 entries, none absent.]

- 1682 I. (£10).—J. PIERPONT MORGAN, Dover House, Roehampton, for Lady Jebba 2nd 8800, fawn and white, born July 12; s. Clatford Comte de Paris 1812, d. Lady Jebba 1st 7341 by Coronation King 3rd 1739.
- 1687 II. (£8).—SIR JOSEPH H. B. D. TICHBORNE, BT., Tichborne Park, Alresford, for Trequean Lily 8707, fawn and white, born Sept. 1, bred by William Penrose, Trequean, Breage, Helston, Cornwall; s. Trequean Mike 2103, d. Lady of the Spurs 7343 by Shamrock of the Spurs 1561.

¹ £10 towards these Prizes were given by the English Guernsey Cattle Society.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

1683 III. (£4.)—J. PIERPONT MORGAN, for Rose of the Effards 3rd B 8709, fawn and white, born March 26; s. Clatford Comte de Paris 1812, d. Rose of the Effards 7454 by Royal Blood 6th 1261 P.S., R.G.A.S.

1680 R. N. & H. C.—SIR EVERARD HAMBRO, K.C.V.O., for Hayes Express 6th.

Class 189.—*Milk Yield Prizes, open to Guernsey Cows and Heifers entered in Class 186 only.* [10 entries, 2 absent]

1666 I. (£10.)—H. FITZWALTER PLUMPTRE, Goodnestone Park, Canterbury, for Violet Des Jaonnets 6388, light red and white, born April 27, 1901, calved Feb. 18, 1911, bred by N. E. Hutton, Les Jaonnets, St. Saviour, Guernsey; s. His Majesty 2nd 1187, P.S., R.G.A.S., d. Violet Des Jaonnets 2119 F.S., R.G.A.S., by Royal Blood 4th 1068, F.S., R.G.A.S.

1654 II. (£6.)—MRS. R. C. BAINBRIDGE Elfordleigh, Plympton, South Devon, for Elfordleigh Judy 5794, lemon and white, born March 7, 1903, calved April 23, 1911; s. Roman Emperor 1419, d. Jane 3770 by Sauter.

1659 III. (£4.)—SIR EVERARD HAMBRO, K.C.V.O., for Hayes Olive. (See Class 186.)

1661 R. N. & H. C.—SIR H. F. LENNARD, BT., for Wickham Fancy 2nd.

Kerries.¹

N.B.—In the Kerry Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Kerry Herd Book. A number without brackets indicates that the animal is registered in the English Kerry Herd Book.

Class 190.—*Kerry Bulls, calved in 1906, 1907, 1908, or 1909.*

[5 entries, 1 absent.]

1690 I. (£10, & Champion.²)—R. TAIT ROBERTSON, Malahide, Co. Dublin, for La Mancha Mr. Dooley (700), born May 7, 1909, bred by John Hilliard, Lake Hotel, Killarney; s. Duke 9th of Carton (613), d. Castle Lough Sloe (3584) by Killeagh (550).

1689 II. (£6.)—LADY GREENALL, Walton Hall, Warrington, for Maelidum (862), born April 8, 1908, bred by Mrs. Madden, Nutley, Booterstown; s. Ptarmigan (646), d. Morna 7th (3246).

1691 III. (£4.)—EDMUND ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for Kilmorna Duke 16th, born Jan. 10, 1908, bred by G. G. Mahony, Kilmorna, Co. Kerry; s. Kilmorna Duke 9th (624), d. Kilmorna 4th (3105) by Waterville Duke (433).

1692 R. N. & H. C.—T. WAITE, Highlands, Redhill, for Kilmorna Duke 17th.

Class 191.—*Kerry Cows (in-milk), calved in or before 1907.*

[12 entries, 1 absent.]

1695 I. (£10, & R. N. for Champion.²)—LADY GREENALL, Walton Hall, Warrington, for Fenella (3005), born May 8, 1899, calved April 25, 1911, bred by the late Earl of Olnemel, Bishopcourt, Ireland; s. Fort Chieftain (204), d. Bishopcourt Christina 3rd (2012) by Fort Chieftain (204).

1694 II. (£6.)—LAURENCE CURRIE, Minley Manor, Farnborough, for Duv Rosebud, born Dec. 10, 1906, calved April 30, 1911, bred by John Neill, Killarney; s. Duv Daniel 590, d. Duv Divine 3231.

1697 III. (£4.)—A. ARTHUR LYLE, Beel House, Amersham Common, for Aileen 1182 F. S. born in 1906, calved Jan. 10, 1911, breeder unknown.

1700 R. N. & H. C.—R. TAIT ROBERTSON, Malahide, for La Mancha Orphan Kate.

Class 192.—*Kerry Heifers (in-milk), calved in 1908.* [4 entries.]

1707 I. (£10.)—LADY GREENALL, Walton Hall, Warrington, for Walton Fame 1076, born in 1908, calved April 19, 1911, breeder unknown.

1705 II. (£6.)—LAURENCE CURRIE, Minley Manor, Farnborough, for Minley Mistress 1253 F.S., born in 1908, calved May 11, 1911, breeder unknown.

1706 III. (£4.)—LADY GREENALL, for Walton Echo 945 F.S., born in 1908, calved March 6, 1911, breeder unknown.

1708 R. N. & H. C.—R. TAIT ROBERTSON, Malahide, Co. Dublin, for Duv Gorse.

Class 193.—*Kerry Heifers, calved in 1909 or 1910.*

[4 entries.]

1709 I. (£10.)—LADY GREENALL, Walton Hall, Warrington, for Walton Feather 1077, born in 1909, breeder unknown.

1712 II. (£6.)—THOMAS WAITE, Highlands, Redhill, for Mangerton Radium, born in 1909, breeder unknown.

1710 III. (£4.)—LADY GREENALL, for Walton Jonquil 3rd 1332, born June 1, 1909; s. Walton Rover 176, d. Walton Jonquil 858 by Walton Standard Bearer 139.

1711 R. N. & H. C.—R. TAIT ROBERTSON, Malahide, Co. Dublin, for Duv Vaga.

¹ £15 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

² Challenge Cup given by the English Kerry and Dexter Cattle Society for the best Animal in Classes 190-193.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 194.—Milk Yield Prizes, open to Kerry Cows and Heifers entered in Classes 191 and 192 only. [8 entries, none absent.]

- 1895 I. (£10).—LADY GREENALL for Fenella. (See Class 191.)
 1896 II. (£6).—LADY GREENALL, for Lackham Lanky 1040, born June 16, 1907, calved June 18, 1911, bred by G. L. Palmer, Lackham, Lacock; s. Lackham Count 161, d. Pretoria 571 by Bobs 98.
 1701 III. (£4).—EDMUND ROYDS, M.P., Holy Cross, Caythorpe, Grantham, for Caythorpe Blossom 2nd 1178, born April 13, 1906, calved May 13, 1911; d. Caythorpe Blossom 728 F.S.
 1708 R. N. & H. C.—R. TAIT ROBERTSON, Malahide, for Duv Gorse.

Dexters.¹

N.B.—In the Dexter Classes, the number inserted within brackets after the name of an animal indicates the number of such animal in the Irish Dexter Herd Book. A number without brackets indicates that the animal is registered in the English Dexter Herd Book.

Class 195.—Dexter Bulls, calved in 1906, 1907, 1908, or 1909.

[13 entries, 1 absent.]

- 1714 I. (£10, & R.N. for Champion.²)—HIS MAJESTY THE KING, Sandringham, for Robin Hood, black, born Jan., 1906, breeder unknown.
 1721 II. (£6).—H. MARTIN GIBBS, Barrow Court, Bristol, for Barrow Bandit, black, born in 1900, breeder unknown.
 1722 III. (£4).—THE HON. MRS. CLAUD PORTMAN, Goldicote, Stratford-on-Avon, for La Mancha Wee Topper 439, black, born in 1908, breeder unknown.
 1720 IV. (£3).—H. MARTIN GIBBS, for Barrow Bacchus 419, black, born April 9, 1909; s. Malvern Topper 306, d. Barrow Pansy 1256.
 1713 R. N. & H. C.—HIS MAJESTY THE KING, for Compton Dago.

Class 196.—Dexter Cows (in-milk), calved in or before 1907.

[8 entries, 1 absent.]

- 1729 I. (£10, & Champion.²)—THE HON. MRS. CLAUD PORTMAN, Goldicote, Stratford-on-Avon, for La Mancha Hard to Find 1233, red, born April 9, 1904, calved April 23, 1911, bred by R. Tait Robertson, Malahide, co. Dublin; s. La Mancha What Next 279, d. La Mancha Dolly Day Dream 1185 F.S.
 1730 II. (£6).—THE HON. MRS. CLAUD PORTMAN, for La Mancha Merry Widow 1776, black, born April, 1907, calved April 5, 1911, breeder unknown.
 1726 III. (£4).—HIS MAJESTY THE KING, Sandringham, for Gort Winnie 3rd 2304, black, born April 3, 1907, calved May 19, 1911, bred by D. M. Rattray, Ballybunion, co. Kerry; s. Gort Sam 516, d. Gort Winnie 2143.
 1728 R. N. & H. C.—H. MARTIN GIBBS, Barrow Court, Bristol, for Barrow Flirt.

Class 197.—Dexter Heifers (in-milk), calved in 1908. [6 entries, none absent.]

- 1737 I. (£10).—H. MARTIN GIBBS, Barrow Court, Bristol, for Barrow Bracelet 1726, black, born in 1908, calved April 26, 1911, breeder unknown.
 1736 II. (£6).—BALDOMERO DE BERTODANO, Cowbridge House, Malmesbury, for Cowbridge Dainty Maid 1648, black, born March 12, calved April 25, 1911; s. Cowbridge Kit 291, d. Cowbridge Dainty Dish 1281 F.S.
 1738 III. (£4).—H. MARTIN GIBBS, for Barrow Duchess 4th 1683, black, born June 29, calved May 15, 1911; s. Barrow Guy Fawkes 384, d. Barrow Duchess 2nd 1297 by Compton Dan 213.
 1739 R. N. & H. C.—R. TAIT ROBERTSON, Malahide, co. Dublin, for Castle Lough Nelly.

Class 198.—Dexter Heifers, calved in 1909 or 1910. [14 entries, 1 absent.]

- 1746 I. (£10).—H. MARTIN GIBBS, Barrow Court, Bristol, for Barrow Buttercup 2nd 1728, black, born June 4, 1909; s. Barrow Count 383, d. Barrow Buttercup 1676.
 1748 II. (£6).—MRS. EDWARD MORANT, Brockenhurst Park, Hants., for Hayward Kennare, black, born Nov. 2, 1908, bred by the late F. J. Morant; s. Dreen Punchbowl 357, d. Wyndthorpe Molly 1548 by Don Gentian 244.
 1744 III. (£4).—THE RT. HON. SIR ERNEST CASSELI, G.C.M.G., Moulton Paddocks, Newmakret, for Moulton Pansy, black, born April 5, 1909; s. Moulton Paddy F.S. 416, d. Compton Derothy F.S. 1260.
 1749 IV. (£3).—THE HON. MRS. CLAUD PORTMAN, Goldicote, Stratford-on-Avon, for Wee Child, black, born in 1908, breeder unknown.
 1745 R. N. & H. C.—BALDOMERO DE BERTODANO, for Cowbridge Ivy.

¹ £15 towards these Prizes were given by the English Kerry and Dexter Cattle Society.

² Challenge Cup given by the English Kerry and Dexter Cattle Society for the best Animal in Classes 195-198.

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[Unless otherwise stated, each prize animal named below was 'bred by exhibitor.']

Class 199.—Milk Yield Prizes, open to Dexter Cows and Heifers entered in Classes 196 and 197 only. [6 entries, 1 absent.]

1736 I. (£10.)—BALDOMERO DE BERTODANO, for Cowbridge Dainty Maid. (See Class 197.)

Dairy Cattle.

Class 200.—Dairy Cows (in-milk), calved in or before 1907.
[17 entries, 1 absent.]

- 1757 I. (£10.)—JOHN EVENS, Burton, Lincoln, for Burton Milker 2nd (vol. 16, p. 284, Lancs. Red Shorthorn), born March, 1905, calved April 26, 1911, bred by Mrs. Holmes, Apley, Lincoln, s. St. Neol's Apollo 2nd 3562, d. by Stangot Curly Coat 2nd 7145.
1756 II. (£8.)—JOHN EVENS, for Burton Amy (Lancs. Red Shorthorn), born March, 1902, calved April 26, 1911, bred by S. Crawley, Hemington, Oundle, s. Glorious 2723, d. Amy by Lord Chancellor 1806.
1765 III. (£4.)—SAM S. RAINGILL, The Grange, Ringway, Altrincham, for Gem (cross-bred), roan, age and breeder unknown, calved June 12, 1911.
1754 IV. (£3.)—THOMAS ATKINSON, Redvales Farm, Bury, Lancs., for Nancy (Shorthorn), roan, born in 1905, calved May 3, 1911, breeder unknown.
1770 R. N. & H. C.—F. B. WILKINSON, Cavendish Lodge, Edwinstowe, Newark, for Sherwood Peggy.

Class 201.—Dairy Heifers (in-milk), calved in 1908.¹
[3 entries.]

- 1772 I. (£10.)—ROBERT W. HOBBS & SONS, Kelmescott, Lechlade, for Melody 12th (Shorthorn), roan, born Aug. 29, 1908, calved April 28, 1911; s. Baron Waterloo 94220, d. Melody 10th by Red Waterloo 6th 82034.
1773 II. (£6.)—FREDERICK LONG, Humberstone Dairy Farm, Southtown, Great Yarmouth, for Dollie 2nd (Shorthorn), roan, born March 2, 1908, calved Feb. 1, 1911.
1771 III. (£4.)—THOMAS ATKINSON, Redvales Farm, Bury, Lancs., for Ada (Shorthorn), roan, born Feb. 3, 1908, calved May 15, 1911; s. Moonfleet 92592.

Class 202.—Milk Yield Prizes, open to Dairy Cows and Heifers entered in Classes 200 and 201 only. [16 entries, none absent.]

- 1761 I. (£10.)—FREDERICK LONG, Humberstone Dairy Farm, Southtown, Gt. Yarmouth, for Nona So Pretty (cross-bred), roan, age and breeder unknown, calved Jan. 3, 1911.
1757 II. (£6.)—JOHN EVENS, for Burton Milker 2nd. (See Class 200.)
1756 III. (£4.)—JOHN EVENS, for Burton Amy. (See Class 200.)
1760 R. N. & H. C.—FREDERICK LONG, for Humberstone Flower.

Butter Tests.² [74 entries, 6 absent.]

Class 203a.—Cows (in-milk), of any age, breed, or cross, exceeding 900 lb. live weight.

- 1550 I. (£15, & B. M.*)—MRS. EVELYN, Wotton House, Dorking, for Comodora (vol. 19, p. 275), broken colour, born Jan. 14, 1905, calved March 31, 1911, bred by P. F. Lahey, Grouville, Jersey; s. Raleigh 7974, d. Bienvenue (8281) P.S.H. C. by Nizam 8988.
1542 II. (£10.)—JOSEPH BRUTTON, for Irish Lass. (See Class 178.)
1686 III. (£5.)—H. F. PLUMPTRE, for Violet des Jaconnets. (See Class 189.)
1566 R. N. & H. C.—LORD ROTHSCHILD, for Triangle 2nd.

Class 203b.—Cows (in-milk), of any age, breed, or cross, not exceeding 900 lb. live weight.

- 1571 I. (£15, & G. M.*)—J. H. SMITH-BARRY, for Post Obit. (See Class 183.)
1552 II. (£10, & S. M.*)—THE LADIES E & D. HOPE, Great Hollenden, Underriver, Sevenoaks, for Stephanotis (vol. 20, p. 434), pale fawn, born Aug. 11, 1905, calved Feb. 27, 1911, bred by D. Mutton, Triangle Farm, Plumpton; s. Musical 8633, d. Santoy by Lord Beaconsfield 7281.
1551 III. (£5.)—MRS. EVELYN, Wotton House, Dorking, for Record 3rd (vol. 21, p. 406), whole grey, born Oct. 7, 1906, calved March 12, 1911, bred by R. J. Arthur, St. Mary's, Jersey; s. Astor 7414, d. Record (9241) F.S.H.O.

¹ Prizes given by the Norwich Local Committee.

² Prizes given by the English Jersey Cattle Society.

³ Gold, Silver, and Bronze Medals given by the English Jersey Cattle Society for the three Jersey animals entered or eligible for entry in the English Jersey Herd Book, obtaining the greatest number of points in the Butter Tests.

[Unless otherwise stated, each prize animal named below was 'bred by exhibitor.']

SHEEP.

Oxford Downs.

Class 204.—*Oxford Down Shearling Rams*. [20 entries, 3 absent.]

- 1785 I. (£10), & 1786 II. (£5).—JAMES HORLICK, Cowley Manor, Cheltenham.
1779 III. (£3), & 1780 R. N. & H. C.—JAMES T. HOBBS, Maisey Hampton, Fairford, Glos.

Class 205.—*Oxford Down Ram Lambs*.¹ [8 entries, none absent.]

- 1795 I. (£10), & 1796 R. N. & H. C.—G. ADAMS & SONS, Royal Prize Farm, Faringdon.
1799 II. (£5).—R. W. HOBBS & SONS, Kelmscott, Lechlade.
1801 III. (£3).—W. J. P. READING & SONS, Langford, Lechlade.

Class 206. *Three Oxford Down Ram Lambs*. [7 entries, 1 absent.]

- 1803 I. (£10).—GEORGE ADAMS & SONS, Royal Prize Farm, Faringdon.
1806 II. (£5), & 1807 R. N. & H. C.—R. W. HOBBS & SONS, Kelmscott, Lechlade.
1809 III. (£3).—W. J. P. READING & SONS, Langford, Lechlade.

Class 207.—*Three Oxford Down Shearling Ewes*. [8 entries, 1 absent.]

- 1810 I. (£10).—ALBERT BRASSEY, Heythrop Park, Chipping Norton.
1814 II. (£5).—JAMES HORLICK, Cowley Manor, Cheltenham.
1817 III. (£3).—H. W. STILGOE, The Grounds, Adderbury, Banbury.
1812 R. N. & H. C.—JAMES T. HOBBS, Maisey Hampton, Fairford.

Class 208.—*Three Oxford Down Ewe Lambs*. [6 entries, none absent.]

- 1818 I. (£10), & 1819 R. N. & H. C.—GEORGE ADAMS & SONS, Faringdon.
1821 II. (£5).—R. W. HOBBS & SONS, Kelmscott, Lechlade.
1820 III. (£3).—JAMES T. HOBBS, Maisey Hampton, Fairford.

Shropshires.²

Class 209.—*Shropshire Two-Shear Rams*. [12 entries, 1 absent.]

- 1832 I. (£10).—THOMAS S. MINTON, Montford, Shrewsbury.
1826 II. (£5).—FRANK BIBBY, Hardwicke Grange, Shrewsbury, for Hardwicke Wrral Staff.
1835 III. (£3).—ALFRED TANNER, Shrawardine, Shrewsbury.
1830 IV. (£2).—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1825 R. N. & H. C.—A. S. BERRY, Shenstone Hall, Lichfield.

Class 210.—*Shropshire Shearling Rams*. [24 entries, 2 absent.]

- 1838 I. (£10).—FRANK BIBBY, Hardwicke Grange, Shrewsbury.
1840 II. (£5), & 1841 IV. (£2).—RICHARD E. BIRCH, Bryn Euryn, Colwyn Bay.
1847 III. (£3).—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1850 V. (£2).—MRS. W. F. INGE, Thorpe, Tamworth.
1842 R. N. & H. C.—THOMAS A. BUTTAR, Corston, Coupar Angus.

Class 211.—*Five Shropshire Shearling Rams*. [12 entries, none absent.]

- 1864 I. (£15).—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1863 II. (£10).—LORD RICHARD CAVENTISH, Holker Hall, Cark-in-Cartmel.
1861 III. (£5).—FRANK BIBBY, Hardwicke Grange, Shrewsbury.
1862 IV. (£2).—THOMAS A. BUTTAR, Corston, Coupar Angus.
1868 R. N. & H. C.—THOMAS S. MINTON, Montford, Shrewsbury.

Class 212.—*Three Shropshire Ram Lambs*. [7 entries, none absent.]

- 1876 I. (£10).—EDWARD NOCK, Harrington Hall, Shifnal.
1877 II. (£5).—ALFRED TANNER, Shrawardine, Shrewsbury.
1875 III. (£3).—THOMAS S. MINTON, Montford, Shrewsbury.
1873 R. N. & H. C.—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.

Class 213.—*Three Shropshire Shearling Ewes*. [5 entries, none absent.]

- 1881 I. (£10), & 1883 III. (£3).—SIR RICHARD COOPER, BT., Shenstone Court, Lichfield.
1879 II. (£5), & 1880 R. N. & H. C.—FRANK BIBBY, Hardwicke Grange, Shrewsbury.

Class 214.—*Three Shropshire Ewe Lambs*. [8 entries, 3 absent.]

- 1884 I. (£10).—RICHARD E. BIRCH, Bryn Euryn, Colwyn Bay.
1888 II. (£5).—EDWARD NOCK, Harrington Hall, Shifnal.
1800 III. (£3).—ALFRED TANNER, Shrawardine, Shrewsbury.
1886 R. N. & H. C.—MRS. W. F. INGE, Thorpe, Tamworth.

¹ Prizes given by the Oxford Down Sheep Breeders' Association.

² £45 towards these Prizes were given by the Shropshire Sheep Breeders' Association.

[Unless otherwise stated, each prize animal named below was bred by exhibitor.]

Southdowns.

Class 215.—Southdown Two-Shear Rams.¹ [11 entries, none absent.]

- 1895 I. (£10, & R. N. for Champion²), & 1891 R. N. & H. C.—C. R. W. ADEANE, Babraham Hall, Cambridge.
1897 II. (£5.)—SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey
1902 III. (£3.)—DERMOT MCCALMONT, Crookfords, Newmarket.

Class 216.—Southdown Shearling Rams [26 entries, none absent.]

- 1910 I. (£10, & Champion²)—SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey.
1922 II. (£5), & 1923 R. N. & H. C.—DERMOT MCCALMONT, Crookfords, Newmarket
1926 III. (£3.)—SIR JULIUS WERNHER, BT, Luton Hoo, Luton.
1920 IV. (£2.)—FREDERICK H. JENNINGS, Cockfield Hall, Bury St. Edmunds.

Class 217.—Three Southdown Shearling Rams.¹ [12 entries, 3 absent]

- 1943 I. (£10.)—SIR JULIUS WERNHER, BT, Luton Hoo, Luton.
1941 II. (£5.)—DERMOT MCCALMONT, Crookfords, Newmarket.
1938 III. (£3), & 1937 R. N. & H. C.—SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey.

Class 218.—Three Southdown Ram Lambs. [13 entries, 2 absent.]

- 1944 I. (£10), & 1945 R. N. & H. C.—HIS MAJESTY THE KING, Sandringham.
1954 II. (£5.)—DERMOT MCCALMONT, Crookfords, Newmarket
1932 III. (£3.)—A. C. HALL, Carlton Grange, Newmarket.
1946 IV. (£2.)—C. R. W. ADEANE, Babraham Hall, Cambridge.

Class 219.—Three Southdown Shearling Ewes. [7 entries, none absent.]

- 1950 I. (£10, & Champion³), & 1940 R. N. & H. C.—SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey.
1961 II. (£5.)—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.
1963 III. (£3.)—SIR JULIUS WERNHER, BT, Luton Hoo, Luton.

Class 220.—Three Southdown Ewe Lambs. [13 entries, 1 absent.]

- 1964 I. (£10, & R. N. for Champion³), & 1965 R. N. & H. C.—HIS MAJESTY THE KING, Sandringham.
1973 II. (£5.)—DERMOT MCCALMONT, Crookfords, Newmarket.
1968 III. (£3.)—W. M. CAZALET, Fairlawn, Tonbridge.
1971 IV. (£2.)—A. C. HALL, Carlton Grange, Newmarket.

Hampshire Downs.

Class 221.—Hampshire Down Two-Shear Rams.⁴ [8 entries, 2 absent.]

- 1979 I. (£10.)—JAMES FLOWER, Chilmark, Salisbury, for ram, bred by H. O. Stephens, Cholderton, Salisbury
1977 II. (£5.)—CARY COLES, Manor House, Winterbourne Stoke, Salisbury.
1983 R. N. & H. C.—HENRY C. STEPHENS, Cholderton Lodge, Salisbury.

Class 222.—Hampshire Down Shearling Rams. [13 entries, 1 absent.]

- 1995 I. (£10.)—THE HON. MRS. PLEYDELL-BOUVERIE, Coleshill House, Highworth.
1997 II. (£5), & 1998 R. N. & H. C.—HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
1989 III. (£3.)—JAMES FLOWER, Chilmark, Salisbury.

Class 223.—Hampshire Down Ram Lambs.¹ [15 entries, 2 absent.]

- 2008 I. (£10, & R. N. for Champion²)—CAPT. J. A. MORRISON, M.P., Berwick House, Hindon, Salisbury.
2005 II. (£5.)—JAMES FLOWER, Chilmark, Salisbury.
2011 III. (£3.)—HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
2009 IV. (£2.)—DONALD NICOLL, Burntwood, Martyr Worthy, Winchester.
2002 R. N. & H. C.—CARY COLES, Manor House, Winterbourne Stoke, Salisbury.

Class 224.—Three Hampshire Down Ram Lambs.

[10 entries, 2 absent.]

- 2021 I. (£10.)—HENRY C. STEPHENS, Cholderton Lodge, Salisbury.
2016 II. (£5.)—JAMES FLOWER, Chilmark, Salisbury.
2014 III. (£3.)—CARY COLES, Manor House, Winterbourne Stoke, Salisbury.
2019 IV. (£2.)—DONALD NICOLL, Burntwood, Martyr Worthy, Winchester.
2018 R. N. & H. C.—CAPT. J. A. MORRISON, M.P., Berwick House, Hindon, Salisbury

¹ Prizes given by the Southdown Sheep Society.

² Champion Gold Medal given by the Southdown Sheep Society for the best Ram in Classes 215 and 216.

³ Silver Medal given by the Southdown Sheep Society for the best Pen of Ewes or Ewe Lambs in Classes 219 and 220.

⁴ Prizes given by the Hampshire Down Sheep Breeders' Association.

⁵ Champion Prize of £10 given by the Hampshire Down Sheep Breeders' Association for the best Ram Lamb, Pen of Ram Lambs or Ewe Lambs in Classes 223, 224, and 226.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 225.—Three Hampshire Down Shearling Ewes. [5 entries, none absent.]

2024 I. (£10), & 2025 III. (£3).—JAMES FLOWER, Chilmark, Salisbury.
2026 II. (£5), & 2027 R. N. & H. C.—DONALD NICOLL, Burntwood, Martyr Worthy, Winchester.

Class 226.—Three Hampshire Down Ewe Lambs. [11 entries, 1 absent.]

2033 I. (£10, & Champion.¹)—JAMES FLOWER, Chilmark, Salisbury.
2028 II. (£5), & 2029 R. N. & H. C.—ALFRED F. BLACKWELL, The Home Farm, Chipperfield, King's Langley.
2038 III. (£3).—HENRY O. STEPHENS, Cholderton Lodge, Salisbury.
2031 IV. (£2).—CARY COLES, Manor House, Winterbourne Stoke, Salisbury.

Suffolks.²

Class 227.—Suffolk Two-Shear Rams. [9 entries, 2 absent.]

2046 I. (£10), & 2047 II. (£5).—HERBERT E. SMITH, The Grange, Walton, Suffolk.
2044 III. (£3).—S. R. SHERWOOD, Playford, Ipswich.
2039 IV. (£2).—R. L. BARCLAY, Higham, Bury St. Edmunds.
2045 R. N. & H. C.—CLEMENT O. SMITH, Trimley, Suffolk, for Festus.

Class 228.—Suffolk Shearling Rams. [8 entries, none absent.]

2054 I. (£10, & Champion³), & 2055 II. (£5).—HERBERT E. SMITH, The Grange, Walton.
2048 III. (£3).—R. L. BARCLAY, Higham, Bury St. Edmunds.
2052 IV. (£2).—S. R. SHERWOOD, Playford, Ipswich.
2060 R. N. & H. C.—D. ABBOTT GREEN, Fingringhoe Hall, Colchester.

Class 229.—Suffolk Ram Lambs. [16 entries, 1 absent.]

2070 I. (£10, & R. N. for Champion⁴), & 2071 II. (£5).—HERBERT E. SMITH, The Grange, Walton, Suffolk.
2067 III. (£3).—S. R. SHERWOOD, Playford, Ipswich.
2069 IV. (£2).—EDWIN GILES, Sladburies Farm, Great Clacton.

Class 230.—Three Suffolk Ram Lambs. [10 entries, none absent.]

2081 I. (£10).—HERBERT E. SMITH, The Grange, Walton, Suffolk.
2074 II. (£5).—D. ABBOTT GREEN, Fingringhoe Hall, Colchester.
2079 III. (£3).—S. R. SHERWOOD, Playford, Ipswich.
2078 IV. (£2).—W. F. PAUL, Kirton Lodge, Ipswich.
2073 R. N. & H. C.—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham.

Class 231.—Three Suffolk Shearling Ewes. [6 entries, none absent.]

2082 I. (£10, & R. N. for Champion⁴), & 2083 II. (£5).—R. L. BARCLAY, Higham, Bury St. Edmunds.
2087 III. (£3).—W. F. PAUL, Kirton Lodge, Ipswich.
2085 IV. (£2).—JOHN R. KEEBLE, Brantham Hall, Manningtree.
2084 R. N. & H. C.—EDWIN GILES, Sladburies Farm, Great Clacton.

Class 232.—Three Suffolk Ewe Lambs. [8 entries, none absent.]

2085 I. (£10, & Champion.⁴)—HERBERT E. SMITH, The Grange, Walton, Suffolk.
2084 II. (£5).—S. R. SHERWOOD, Playford, Ipswich.
2080 III. (£3).—D. ABBOTT GREEN, Fingringhoe Hall, Colchester.
2089 IV. (£2).—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham, Essex.
2083 R. N. & H. C.—W. F. PAUL, Kirton Lodge, Ipswich.

Class 233.—Three Suffolk Yearling Ewes, in Wool. [4 entries.]

2086 I. (£10).—EDWIN GILES, Sladburies Farm, Great Clacton.
2089 II. (£5).—CLEMENT O. SMITH, Trimley, Suffolk.
2088 III. (£3).—CLEMENT O. SMITH, for ewes, bred by J. W. Eagle, Walton-on-the-Naze.
2087 IV. (£2).—JOHN R. KEEBLE, Brantham Hall, Manningtree.

Dorset Downs.⁵

Class 234.—Dorset Down Shearling Rams. [4 entries, none absent.]

2101 I. (£10).—(1. C. WOOD HOMER, Bardolf Manor, Dorchester.
2100 II. (£5).—EDEN & WATSON, Purse Caundle, Sherborne, Dorset.

¹ Champion Prize of £10 given by the Hampshire Down Sheep-Breeders' Association for the best Ram Lamb, Pen of Ram Lambs or Ewe Lambs in Classes 223, 224, and 226.

² £36 towards these Prizes were given by the Suffolk Sheep Society, and £21 by the Norwich Local Committee.

³ Champion Prize of £10 given by the Suffolk Sheep Society for the best Ram in Classes 227-229.

⁴ Champion Prize of £10 given by the Suffolk Sheep Society for the best Pen of Ewes or Ewe Lambs in Classes 231-233.

⁵ £25 towards these Prizes were given by the Dorset Down Sheep Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

Class 235.—Three Dorset Down Ram Lambs. [4 entries, 1 absent.]

- 2104 I. (£10.)—EDEN & WATSON, Purse Caundle, Sherborne, Dorset
2107 II. (£5.)—RANDOLPH TORY, Charnworth, Whitechurch, Blandford

Class 236.—Three Dorset Down Shearling Ewes. [3 entries, none absent.]

- 2109 I. (£10.)—G. C. WOOD HOMER, Bardolf Manor, Dorchester.
2108 II. (£5.)—EDEN & WATSON, Purse Caundle, Sherborne, Dorset.

Class 237.—Three Dorset Down Ewe Lambs [3 entries, none absent.]

- 2113 I. (£10.)—RANDOLPH TORY, Charnworth, Whitechurch, Blandford.
2111 II. (£5.)—EDEN & WATSON, Purse Caundle, Sherborne, Dorset.

Dorset Horn.¹

Class 238.—Dorset Horn Shearling Rams, dropped after November 1, 1909.
[7 entries, 1 absent.]

- 2115 I. (£10, & Champion².)—W. R. FLOWER, West Stafford, Dorchester, for Flower's No. 269 2490.
2130 II. (£5.)—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.
2118 III. (£3.)—SIR EVERARD HAMBRO, K.C.V.O., Milton Abbey, Blandford, for Delcombe No. 104 2492.
2114 R. N. & H. C.—W. R. FLOWER, for Flower's No. 270.

Class 239.—Three Dorset Horn Ram Lambs, dropped after November 1, 1910.
[4 entries.]

- 2123 I. (£10.) & 2122 R. N. & H. C.—SIR EVERARD HAMBRO, K.C.V.O., Milton Abbey, Blandford.
2121 II. (£5.)—W. R. FLOWER, West Stafford, Dorchester, for Flower's No. 271 2530, Flower's No. 272 2531, and Flower's No. 274 2533.
2124 III. (£3.)—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater.

Class 240.—Three Dorset Horn Shearling Ewes, dropped after November 1, 1909. [4 entries.]

- 2125 I. (£10, & R. N. for Champion²), & 2126 III. (£3.)—W. R. FLOWER, West Stafford, Dorchester.
2127 II. (£5.)—SIR EVERARD HAMBRO, K.C.V.O., Milton Abbey, Blandford.
2128 R. N. & H. C.—FRANK J. MERSON & SON, Farringdon, North Petherton.

Class 241.—Three Dorset Horn Ewe Lambs, dropped after November 1, 1910.
[4 entries.]

- 2130 I. (£10), & 2129 R. N. & H. C.—W. R. FLOWER, West Stafford, Dorchester.
2131 II. (£5.)—SIR EVERARD HAMBRO, K.C.V.O., Milton Abbey, Blandford.
2132 III. (£3.)—FRANK J. MERSON & SON, Farringdon, North Petherton, Bridgwater

Ryelands.³

Class 242.—Ryeland Rams, Two-Shear and upwards. [1 entries]

- 2134 I. (£10.)—F. E. GOUGH, The Moor, Bodenham, Leominster, for Bodenham Auctioneer, born in 1903, bred by W. T. Barneby, Saltmarsh Castle, Bromyard; a Auctioneer 4, d. H. 221
2133 II. (£5.)—HUGH A. CHRISTY, Llangoed Castle, Llyswen, Brecon, for Royal Liverpool, born in 1909, bred by W. T. Barneby, Saltmarsh Castle, Bromyard; a Two Star, d. by Park Royal 77.
2135 III. (£3.)—MRS. CONSTANCE L. HERBERT, Clytha Park, Abergavenny, for Llangoed Master 82A, born in 1903, bred by H. A. Christy, Llangoed, Llyswen, Brecon; a Wainmynich Captain 125, d. by Royal Moor 87.
2136 R. N. & H. C.—D. J. THOMAS, Talachddu, Brecon, for Blackwood Combination.

Class 243.—Ryeland Shearling Rams. [6 entries, none absent.]

- 2137 I. (£10.)—HUGH A. CHRISTY, Llangoed Castle, Llyswen, Brecon; a Royal Gloucester 85A, d. by Wainmynich Captain 125.
2138 II. (£5.)—HUGH A. CHRISTY; a Royal Gloucester 85A, d. by Royal Moor 87.
2142 III. (£3.)—D. J. THOMAS, Talachddu, Brecon; a Two Star
2139 R. N. & H. C.—F. E. GOUGH, The Moor, Bodenham, Leominster

¹ £18 towards these Prizes were given by the Dorset Horn Sheep Breeders' Association.

² Champion Prize of £5 given by the Dorset Horn Sheep Breeders' Association for the best Ram, Pen of Lambs or Ewes in Classes 238-241.

³ £18 towards these Prizes were given by the Ryeland Flock Book Society.

Award of Live Stock Prizes at Norwich, 1911. xciii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 244.—*Three Ryeland Shearling Ewes.* [6 entries, 1 absent.]

- 2145 I. (£10.)—F. E. GOUGH, The Moor, Bodenham, Leominster; ss. Bodenham and White Heather.
 2143 II. (£5.)—HUGH A. CHRISTY, Llangoed Castle, Llyswen, Brecon; s. Royal Gloucester 85A.
 2148 III. (£3.)—D. J. THOMAS, Talachddu, Brecon; s. Two Star.
 2146 R. N. & H. C.—MRS. CONSTANCE L. HERBERT, Clytha Park, Abergavenny.

Kerry Hill (Wales).

Class 245.—*Kerry Hill (Wales) Rams, Shearling and Upwards.* [3 entries, none absent.]

- 2149 I. (£10.)—WILLIAM ALDERSON, Glanmeheli, Kerry, Newtown, Mont., for Pentrenant Diamond 2726, born in 1903, bred by W. Davies, Pentrenant Sarn, Mont.; s. Penygelly Orphan 17741, d. by Pentrenant Perfect.
 2150 II. (£5.)—LORD HARLECH, Brogyntyn, Oswestry, for Brogyntyn Darius, born in 1909; s. Brogyntyn Bendigo 1855, d. by Protector 924.

Class 246.—*Three Kerry Hill (Wales) Shearling Ewes.* [2 entries.]

- 2152 I. (£10.)—LORD HARLECH, Brogyntyn, Oswestry; s. Brogyntyn Dervich 2611.
 2153 R. N. & H. C.—THE DUKE OF WESTMINSTER, Eaton Hall, Chester.

Lincolns.¹

Class 247.—*Lincoln Two-Shear Rams.* [10 entries, 1 absent.]

- 2154 I. (£10, & Champion.²)—TOM CASSWELL, Pointon House, Folkingham for Pointon Cracker 4th 11971; s. Pointon Cracker 3rd 9881.
 2100 II. (£5.)—F. MILLER, La Belen, Clifton Road, Birkenhead, for Riby Gordon (late Riby Whitewall Gordon), bred by Henry Dudding, Riby Grove, Great Grimsby; s. Whitewall Royal Gordon 11050.
 2103 III. (£3.)—R. & W. WRIGHT, Nocton Heath, Lincoln, for Beaufoe Bragger 11644, bred by W. H. Pate, Waddington, Lincs.; s. Quarrington Beaufoe 9059.
 2176 R. N. & H. C.—J. H. DEAN & SONS, Heath House, Nocton, Lincoln, for Dowsby Excellent.
 2154 & 2204 (R. N. for Champion.²)—TOM CASSWELL.

Class 248.—*Lincoln Shearling Rams.* [20 entries, 2 absent.]

- 2173 I. (£10, & R. N. for Champion.²), 2174 III. (£3.), & 2175 IV. (£2.)—HENRY DUDDING, Riby Grove, Great Grimsby.
 2182 II. (£5.)—R. & W. WRIGHT, Nocton Heath, Lincoln.
 2179 R. N. & H. C.—JOHN PEARS, Mere, Lincoln.
 2173 & 2209 (Champion.²)—HENRY DUDDING.

Class 249.—*Five Lincoln Shearling Rams.* [13 entries, 3 absent.]

- 2199 I. (£15.)—HENRY DUDDING, Riby Grove, Great Grimsby.
 2195 II. (£10.)—JOHN PEARS, Mere, Lincoln.
 2193 III. (£5.)—CHARLES F. HOWARD, Nocton Rise, Lincoln.
 2187 IV. (£2.)—TOM CASSWELL, Pointon House, Folkingham.
 2185 R. N. & H. C.—THOMAS CAMPION, East Heslerton, York.

Class 250.—*Three Lincoln Ram Lambs.* [6 entries, 1 absent.]

- 2197 I. (£10), & 2198 III. (£3.)—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.
 2201 II. (£5.)—CHARLES F. HOWARD, Nocton Rise, Lincoln.
 2200 R. N. & H. C.—HENRY DUDDING, Riby Grove, Great Grimsby.

Class 251.—*Three Lincoln Shearling Ewes.* [8 entries, 1 absent.]

- 2200 I. (£10), & 2208 II. (£5.)—HENRY DUDDING, Riby Grove, Great Grimsby.
 2204 III. (£3.)—TOM CASSWELL, Pointon House, Folkingham.
 2210 R. N. & H. C.—CHARLES F. HOWARD, Nocton Rise, Lincoln.

¹ £26 towards these Prizes were given by the Lincoln Long-Wool Sheep Breeders' Association.

² Piece of Plate given by the Lincoln Long-Wool Sheep Breeders' Association for the best Ram in Classes 247 and 248.

³ Challenge Bowl given through the Lincoln Long-Wool Sheep Breeders' Association for the best group of one Ram and three Ewes, bred by Exhibitor, in Classes 247, 248, 251, and 253.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

Class 252.—Three Lincoln Five Lambs. [5 entries, 1 absent.]

- 2212 I. (£10.) & 2211 II. (£5.)—J. H. DEAN & SONS, Heath House, Nocton, Lincoln
2211 III. (£3.)—HENRY DUDDING, Riby Grove, Great Grimsby.
2213 R. N. & H. C.—ROBERT DIXON, Brandesburton, Bailf, Hull.

Class 253.—Three Lincoln Yearling Ewes, in wool. [1 entries.]

- 2219 I. (£10.)—WILLIAM B SWALLOW, Wootton Lawn, Ulceby
2218 II. (£5.)—HENRY DUDDING, Riby Grove, Great Grimsby
2217 III. (£3.)—J. H. DEAN & SONS, Heath House, Nocton, Lincoln.
2216 R. N. & H. C.—CAPT. CLIVE BEHRENS, Swinton Grange, Milton.

Leicesters.¹

Class 254.—Leicester Shearling Rams. [10 entries, none absent.]

- 2224 I. (£10.)—GEORGE HARRISON, Gainford Hall, Darlington
2228 II. (£5.)—J. E. & C. H. SIMPSON, Pilmoor House, Hunmanby, Yorks.

Class 255.—Three Leicester Ram Lambs. [2 entries.]

- 2231 I. (£10.)—J. E. & C. H. SIMPSON, Pilmoor House, Hunmanby, Yorks.
2230 II. (£5.)—GEORGE HARRISON, Gainford Hall, Darlington.

Class 256.—Three Leicester Shearling Ewes. [3 entries.]

- 2232 I. (£10.) & 2233 II. (£5.)—E. F. JORDAN, Eastburn, Driffield.
2234 R. N. & H. C.—J. E. & C. H. SIMPSON, Pilmoor House, Hunmanby, Yorks.

Class 257.—Three Leicester Ewe Lambs. [2 entries.]

- 2236 I. (£10.)—J. E. & C. H. SIMPSON, Pilmoor House, Hunmanby, Yorks.
2235 II. (£5.)—GEORGE HARRISON, Gainford Hall, Darlington.

Border Leicesters.²

Class 258.—Border Leicester Rams, Two-Shear and upwards.
[4 entries.]

- 2238 I. (£10.)—J. ERNEST KERR, Harviestoun Castle, Dollar, N.B., for Ace of Hearts
2475, born in 1908, bred by J. & J. R. O Smith, Galalaw, Kelso; s. Darwick Tower
2025, d. B. L. 126, H.
2240 II. (£5.)—THE SCREMERSTON COAL CO., LTD., Heathery Tops, Scremerston,
Berwick-on-Tweed, for Heathery Squire 2559, born in 1908, bred by the late D. Hume,
Barrelwell, Brechin; s. Temptation 1515, d. B. L. 74, H. 23, by Royal Prince 1140.
2237 III. (£3.)—THE RT. HON. A. J. BALFOUR, M.P., Whittingehame, Prestonkirk,
for Home Pride 2422, born in 1909
2239 R. N. & H. C.—WILLIAM ROBSON, Low Hedgeley, Alnwick.

Class 259.—Border Leicester Shearling Rams. [15 entries, 1 absent.]

- 2244 I. (£10. & Champion.³) DAVID P. ELLIOT, Nisbet Hill, Dun.
2253 II. (£5.)—THE SCREMERSTON COAL CO., LTD., Heathery Tops, Scremerston,
Berwick-on-Tweed.
2249 III. (£3.) & 2250 R. N. & H. C.—WILLIAM ROBSON, Low Hedgeley, Alnwick.

Class 260.—Border Leicester Shearling Ewes. [9 entries, none absent.]

- 2264 I. (£10. & R. N. for Champion.³) THE SCREMERSTON COAL CO., LTD., Heathery
Tops, Scremerston, Berwick-on-Tweed.
2259 II. (£5.) & 2258 III. (£3.)—DAVID P. ELLIOT, Nisbet Hill, Dun.
2263 R. N. & H. C.—WILLIAM ROBSON, Low Hedgeley, Alnwick.

Wensleydales.⁴

Class 261.—Wensleydale Rams, Two-Shear and upwards.
[4 entries.]

- 2267 I. (£10.)—RICHARD PROCTER, Burkfield, Worston, Clitheroe, for Royal Gloucester
1503, born in 1908, bred by William Rhodes, Lundholme, Westhouse, Knibby
Lonsdale; s. Lending Blue 1256, d. by Blue Prince 855.

¹ £15 towards these Prizes were given by the Leicester Sheep Breeders' Association.

² £15 towards these Prizes were given by the Society of Border Leicester Sheep Breeders.

³ Perpetual Challenge Cup given by the Society of Border Leicester Sheep Breeders for the best Ram or Ewe in Classes 258-260.

⁴ £10 10s. towards these Prizes were given by the Wensleydale Blue-faced Sheep Breeders' Association and Flock Book Society, and £10 10s. by the Wensleydale Longwool Sheep Breeders' Association.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2266 II. (£5.) LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale, for Mowbrick Dreadnought 1480, born in 1904, bred by R. H. Milner, Mowbrick, Hest Bank, Lancaster; s. Mowbrick Hero 1361, d. by St. Vincent 831.

2268 III. (£3.)—THE EXORS. OF THE LATE THOMAS WILLIS, Manor House, Carperby, Yorks., for Royal Fancy, born in 1900, bred by Richard Procter, Barkerfield, Clitheroe; s. Penrod 1272, d. by Blue Bob 1214.

2265 R. N. & H. C.—LORD HENRY BENTINCK, M.P., for Prince Bertie.

Class 262.—*Wensleydale Shearling Rams.* [5 entries, none absent.]

2272 I. (£10.)—THE EXORS. OF THE LATE THOMAS WILLIS, Manor House, Carperby, for ram, bred by W. Rhodes, Lundholme, Westhouse, Kirkby Lonsdale; s. Leading Standard 1400, d. by Chatham 1118.

2271 II. (£5.)—THE EXORS. OF THE LATE THOMAS WILLIS, for ram, bred by William Rhodes, Lundholme Westhouse, Kirkby Lonsdale; s. Blue Bertie 1214, d. by Blue Prince 855.

2269 III. (£3.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale, for Welcome Bertie, bred by William Rhodes, Lundholme, Westhouse, Kirkby Lonsdale; s. Blue Bertie 1214, d. by Welcome 592.

2273 R. N. & H. C.—THE EXORS. OF THE LATE THOMAS WILLIS.

Class 263.—*Three Wensleydale Shearling Rams.* [2 entries.]

2274 I. (£10.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale.

2275 II. (£5.)—THE EXORS. OF THE LATE THOMAS WILLIS, Manor House, Carperby.

Class 264.—*Three Wensleydale Shearling Ewes.* [4 entries.]

2270 I. (£10.)—THE EXORS. OF THE LATE THOMAS WILLIS, Manor House, Carperby.

2276 II. (£5), & 2277 III. (£3.)—LORD HENRY BENTINCK, M.P., Underley Hall.

2278 R. N. & H. C.—RICHARD PROCTER, Barkerfield, Worston, Clitheroe.

Lonks.¹

Class 265.—*Lonk Rams, Shearling and upwards.* [2 entries.]

2280 I. (£10.)—DAVID HAGUE, Copy Nook Hotel, Clitheroe, for County Councillor, born in 1910, bred by Robert Crabtree, County Brook, Foulbridge, Colne; s. County Brook Painter 19.

2281 II. (£5.)—DAVID HAGUE, for Painter's Model, born in 1907, bred by Robert Crabtree, County Brook, Foulbridge, Colne; s. County Brook Painter 19.

Class 266.—*Three Lonk Shearling Ewes.* [2 entries.]

2282 I. (£10), & 2283 II. (£5.)—DAVID HAGUE, Copy Nook Hotel, Clitheroe.

Derbyshire Gritstones.²

Class 267. - *Derbyshire Gritstone Rams, Two-Shear and upwards.*

[3 entries.]

2284 I. (£10.)—THE EARL OF DERBY, Clough House, Wildboarclough, Macclesfield, for Hill House Harold, born in 1908, bred by James Ripley, Hill House Farm, Hayfield.

2286 II. (£5.)—DANIEL C. WHELTON, Lower Nabs, Wincle, Macclesfield, for Goytdale Ranger 18, born in 1900, bred by William Trueman, Goytdale Buxton.

2285 III. (£3.)—THE EARL OF DERBY, for Goyt Dale Eock, born in 1900, bred by William Trueman, Goytdale, Buxton.

Class 268. - *Derbyshire Gritstone Shearling Rams.* [4 entries, none absent.]

2290 I. (£10.)—DANIEL C. WHELTON, Lower Nabs, Wincle, Macclesfield, for Nabs Major; s. Nabs Diamond 41, d. Nabs 293.

2287 II. (£5.)—THE EARL OF DERBY, Clough House, Wildboarclough, Macclesfield, for Crag Bromley.

2288 III. (£3.)—THE EARL OF DERBY, for ram, bred by Sir Gilbert Greenall, Bt., Tinsington, Derbyshire.

Class 269.—*Three Derbyshire Gritstone Shearling Ewes.*

[4 entries, none absent.]

2291 I. (£10.)—THE EARL OF DERBY, Clough House, Wildboarclough, Macclesfield, for ewe, bred by Sir Gilbert Greenall, Tinsington, Derbyshire.

2293 II. (£5.)—DANIEL C. WHELTON, Lower Nabs, Wincle, Macclesfield, for Nabs Nos. 375, 379 and 395.

2292 III. (£3.)—THE EARL OF DERBY, for Crag 159, 175 and 176.

¹ £10 towards these Prizes were given by the Lonk Sheep Breeders' Association.

² £18 towards these Prizes were given by the Derbyshire Gritstone Sheep Breeders' Society.

xcvi *Award of Live Stock Prizes at Norwich, 1911.*

[Unless otherwise stated, each prize animal named below was bred by exhibitor.]

Kent or Romney Marsh.¹

Class 270.—*Kent or Romney Marsh Two-Shear Rams.*

[11 entries, none absent.]

- 2296 I. (£10, & R. N. for Champion.²)—CHARLES FILE, Elham, Canterbury.
 2304 II. (£5.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
 2302 III. (£3.)—J. BANBURY PALMER, New Shelve Manor, Lenham, Kent.
 2295 R. N. & H. C.—GEORGE FARMER, Leeds Abbey, Maidstone.

Class 271.—*Kent or Romney Marsh Shearling Rams.*

[33 entries, 6 absent.]

- 2335 I. (£10, & Champion²), & 2331 III. (£3.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
 2329 II. (£5.)—THE EXORS. OF THE LATE WILLIAM MILLEN, Syndale Valley, Faversham, for ram, bred by the late William Millen.
 2313 IV. (£2), & 2312 V. (£2.)—CHARLES FILE, Elham, Canterbury.
 2310 R. N. & H. C.—GEORGE FARMER, Leeds Abbey, Maidstone.

Class 272.—*Five Kent or Romney Marsh Shearling Rams.*

[8 entries, none absent.]

- 2345 I. (£15.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
 2340 II. (£10.)—CHARLES FILE, Elham, Canterbury.
 2343 III. (£5.)—THE EXORS. OF THE LATE WILLIAM MILLEN, Syndale Valley, Faversham, for rams, bred by the late William Millen.
 2344 R. N. & H. C.—FREDERICK NEAME, Macknade, Faversham.

Class 273.—*Three Kent or Romney Marsh Ram Lambs.*

[14 entries, none absent.]

- 2355 I. (£10.)—THE EXORS. OF THE LATE WILLIAM MILLEN, Syndale Valley, Faversham.
 2358 II. (£5), & 2359 R. N. & H. C.—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
 2360 III. (£3.)—WILLIAM RENDALL, Hempton Lodge, Monks Horton, Hythe.
 2357 IV. (£2.)—J. BANBURY PALMER, New Shelve Manor, Lenham, Kent.

Class 274.—*Three Kent or Romney Marsh Shearling Ewes.*

[15 entries, none absent.]

- 2371 I. (£10.)—FREDERICK NEAME, Macknade, Faversham.
 2364 II. (£5.)—CHARLES FILE, Elham, Canterbury.
 2373 III. (£3.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
 2372 IV. (£2.)—J. BANBURY PALMER, New Shelve Manor, Lenham, Kent.
 2375 R. N. & H. C.—WILLIAM RENDALL, Hempton Lodge, Monks Horton, Hythe.

Class 275.—*Three Kent or Romney Marsh Ewe Lambs.*

[12 entries, 1 absent.]

- 2382 I. (£10.)—THE EXORS. OF THE LATE WILLIAM MILLEN, Syndale Valley, Faversham.
 2386 II. (£5.)—J. EGERTON QUESTED, The Firs, Cheriton, Kent.
 2383 III. (£3.)—FREDERICK NEAME, Macknade, Faversham.
 2384 R. N. & H. C.—J. BANBURY PALMER, New Shelve Manor, Lenham, Kent.

Cotswolds.³

Class 276.—*Cotswold Shearling Rams.* [13 entries, none absent.]

- 2390 I. (£10.)—W. T. GARNE & SON, Aldsworth, Northleach.
 2391 II. (£5), & 2393 III. (£3.)—WILLIAM HOULTON, Broadfield Farm, Northleach, Glos.
 2388 R. N. & H. C.—DIXON & MURTON, Pudding Norton, Fakenham.

Class 277.—*Three Cotswold Ram Lambs.* [8 entries, none absent.]

- 2403 I. (£10.)—W. T. GARNE & SON, Aldsworth, Northleach.
 2407 II. (£5.)—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.
 2404 III. (£3.)—WILLIAM HOULTON, Broadfield Farm, Northleach.
 2401 R. N. & H. C.—DIXON & MURTON, Pudding Norton, Fakenham.

¹ £48 towards these Prizes were given by the Kent or Romney Marsh Sheep Breeders' Association.

² Champion Prize of £10 10s. given by the Kent or Romney Marsh Sheep Breeders' Association for the best Ram in Classes 270 and 271.

³ £25 towards these Prizes were given by the Cotswold Sheep Society.

Award of Live Stock Prizes at Norwich, 1911. xvii

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 278.—Three Cotswold Shearling Ewes. [7 entries, none absent.]

2413 I. (£10.)—WILLIAM HOULTON, Broadfield Farm, Northleach.

2411 II. (£5.)—W. T. GARNE & SON, Aldsworth, Northleach.

2409 III. (£3.)—DIXON & MURTON, Pudding Norton, Fakenham, for D. N. 470, D. N. 484, D. N. 516; s. Vulcanite 1236, ds 132, 134, 173 by Draco 557.

2421 R. N. & H. C.—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.

Class 279.—Three Cotswold Ewe Lambs. [7 entries, none absent.]

2416 I. (£10.) & 2417 II. (£5.)—W. T. GARNE & SON, Aldsworth, Northleach, Glos

2421 III. (£3.)—RUSSELL SWANWICK, Royal Agricultural College Farm, Cirencester.

2418 R. N. & H. C.—WILLIAM HOULTON, Broadfield Farm, Northleach.

Devon Long-Wools.¹

Class 280. Devon Long-Wool Rams, Two-Shear and upwards.

[4 entries, none absent.]

2424 I. (£10.) & 2423 R. N. & H. C.—ROBERT COOK, Crazelowman, Tiverton, for rams, born in 1909.

2426 II. (£5.)—FREDERICK WHITE, Torweston, Williton, Somerset, for Torweston Curly Lad, born in 1909; s. Monksilver Wellwoolled 1422.

Class 281.—Devon Long-Wool Shearling Rams. [5 entries, none absent.]

2430 I. (£10.)—FREDERICK WHITE, Torweston, Williton, Somerset.

2428 II. (£5.)—ROBERT COOK, Crazelowman, Tiverton, for Best Intention.

2429 R. N. & H. C.—ROBERT COOK, for Parting Shot.

Class 282.—Three Devon Long-Wool Shearling Ewes. [3 entries.]

2432 I. (£10.)—ROBERT COOK, Crazelowman, Tiverton, Devon.

2433 II. (£5.) & 2434 R. N. & H. C.—FREDERICK WHITE, Torweston, Williton, Somerset.

South Devons.²

Class 283.—South Devon Two-Shear Rams. [1 entry.]

2435 I. (£10.)—JOHN STOOKE, Sherford, Brixton, Plymouth.

Class 284.—South Devon Shearling Rams. [5 entries, 1 absent.]

2438 I. (£10.)—EDWARD H. HOSKIN, Cartuther Barton, Liskeard, for Hoskin's No. 2 of 1910; s. Wintle's No. 13 of 1906.

2440 II. (£5.)—JOHN STOOKE, Sherford, Brixton, Plymouth.

2436 R. N. & H. C.—PHILIP GEORGE BROWN, Tremadart, Duloe, Cornwall, for Tremadart No. 4.

Class 285.—Three South Devon Ram Lambs. [2 entries.]

2442 I. (£10.)—JOHN STOOKE, Sherford, Brixton, Plymouth.

2441 II. (£5.)—EDWARD H. HOSKIN, Cartuther Barton, Liskeard.

Class 286.—Three South Devon Shearling Ewes. [2 entries.]

2443 I. (£10.)—PHILIP GEORGE BROWN, Tremadart, Duloe, Cornwall.

2444 II. (£5.)—JOHN STOOKE, Sherford, Brixton, Plymouth.

Class 287.—Three South Devon Ewe Lambs. [2 entries.]

2446 I. (£10.)—JOHN STOOKE, Sherford, Brixton, Plymouth.

2445 II. (£5.)—PHILIP GEORGE BROWN, Tremadart, Duloe, Cornwall.

Dartmoors.³

Class 288.—Dartmoor Rams, Two-Shear and upwards. [3 entries.]

2449 I. (£10.)—R. S. LUSCOMBE, Wisdome, Cornwood, for Cobham, born in 1909, bred by John Yelland, Cobham Week, Bridestowe, Devon.

2447 II. (£5.)—JOHN R. T. KINGWELL, Great Aish, South Brent, for Reep, born in 1909, bred by Mr. Reep, Nator, Tavistock.

2448 III. (£3.)—JOHN R. T. KINGWELL, for Royal Champion, born in 1908, bred by R. S. Luscombe, Cornwood, Devon.

¹ £15 towards these Prizes were given by the Devon Long-Woolled Sheep Breeders' Society.

² £30 towards these Prizes were given by the South Devon Flock Book Association.

³ £18 towards these Prizes were given by the Dartmoor Sheep Breeders' Association.

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[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

Class 289.—Dartmoor Shearling Rams. [9 entries, none absent.]

- 2456 I. (£10).—E. P. NORTHEY, Higher Bowden, Okehampton
2458 II. (£5).—JOHN R. T. KINGWELL, Great Ash, South Brent, for **Brent Sammy**; s Peter, d. Brent Sammy & Mother by Corroctor
2452 III. (£3).—W. A. JOINS & SONS, Cleave, Kelly, Linton, Devon

Class 290.—Three Dartmoor Shearling Ewes [3 entries, 1 absent.]

- 2460 I. (£10).—WILLIAM ROWSE, Okehampton.
2461 II. (£5).—JOHN YELLAND, Cobham Week, Bidestowe, Devon.

Exmoors.¹

Class 291.—Ermoor Rams, Two-Shear and upwards [5 entries, 1 absent.]

- 2461 I. (£10).—PERCY SMYTH, Broford, Dulverton, for **Triscombe Dunster 2 356**, born in 1909, bred by R. A. Taylor, Triscombe, Dunster; s Forest Capital 235
2466 II. (£5).—ALLAN C. YOUNG, Watergate House, Bullford, Wilts., for **Lidcott No. 6 335** born in 1909, bred by John Robins, Lidcott Hall, High Bray, South Molton.
2465 III. (£3).—D. J. TAPP, Highercombe, Dulverton, for ram, born in 1908.
2463 R. N. & H. C.—RICHARD R. ROTHWELL, Morebath Manor, Bampton, for **Loyton No. 8**.

Class 292.—Ermoor Shearling Rams [5 entries 1 absent.]

- 2470 I. (£10).—PERCY SMYTH, Broford, Dulverton, for **Broford Model: s Triscombe Dunster 83**.
2468 II. (£5).—RICHARD R. ROTHWELL, Morebath Manor, Bampton, for **Loyton No. 11**.
2469 III. (£3).—RICHARD R. ROTHWELL, for **Loyton No. 12**.
2471 R. N. & H. C.—D. J. TAPP, Highercombe, Dulverton

Class 293.—Three Exmoor Shearling Ewes. [5 entries, none absent.]

- 2472 I. (£10).—JOHN ROBINS, Lidcott Hall, High Bray, South Molton
2474 II. (£5), & 2473 R. N. & H. C.—RICHARD R. ROTHWELL, Morebath Manor, Bampton, Devon
2475 III. (£3).—ALLAN C. YOUNG, Watergate House, Bullford, Wilts.

Cheviots.²

Class 294.—Cheviot Rams, Two-Shear and upwards.

[6 entries, none absent.]

- 2481 I. (£10).—JOHN ROBSON, Newton, Bellingham, for ram, born in 1909.
2479 II. (£5).—JACOB ROBSON, Byrness, Otterburn, for ram, born in 1909.
2477 R. N. & H. C.—JOHN T. DODD, Riccarton, Newcastleton.

Class 295.—Cheviot Shearling Rams. [4 entries, none absent.]

- 2485 I. (£10), & 2486 II. (£5).—JOHN ROBSON, Newton, Bellingham.
2484 R. N. & H. C.—JACOB ROBSON, Byrness, Otterburn.

Class 296.—Cheviot Shearling Ewes. [4 entries, none absent.]

- 2489 I. (£10), & 2490 R. N. & H. C.—JOHN ROBSON, Newton, Bellingham.
2487 II. (£5).—JACOB ROBSON, Byrness, Otterburn.

Herdwicks.

Class 297.—Herdwick Rams, Shearling and upwards.

[3 entries, none absent.]

- 2493 I. (£10).—THOMAS IRELAND, Stockhow Hall, Frizington, Cumberland, for **Pear King**, born in 1906, bred by W. J. Crossley, M.P., Pullwood, Ambleside.

Class 298.—Three Herdwick Shearling Ewes. [1 entry.]

- 2494 I. (£10).—THOMAS IRELAND, Stockhow Hall, Frizington, Cumberland.

Welsh Mountain.³

Class 299.—Welsh Mountain Rams, Shearling and upwards. [4 entries.]

- 2498 I. (£10).—MRS M. E. WYNNE-FINCH, Voelas, Bettws-y-coed, for **Voelas Dei 348**, born in 1908; s. Voelas Gwerclas 261, d. by Gwerclas 1st.
2495 II. (£5).—ROBERT F. JONES, Halod, Corwen, for **Berwyn**, born in 1910, bred by Capt Best, Virod, Llansgollen.

¹ £18 towards these Prizes were given by the Exmoor Horn Sheep Breeders' Society.

² £15 towards these Prizes were given by Breeders of Cheviot Sheep.

³ £10 towards these Prizes were given by the Welsh Mountain Flock Book Society.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2197 III. (£3.)—MRS. M. E. WYNNE-FINCH for Voelas Buchan 427, born in 1909; s. Voelas Gwerclas 281, d. No. 52.

2196 R. N. & H. C.—ROBERT E. JONES, for Cymro.

Class 300.—*Three Welsh Mountain Shearling Ewes.* [5 entries, none absent.]

2501 I. (£10.)—WILLIAM GEORGE ROBERTS, Dyserth Hall, Dyserth, Flint.

2499 II. (£5.)—JOHN GRIFFITHS GRATTON, Foryd Farm, Abergele

2500 III. (£3.)—ROBERT E. JONES, Hafod, Corwen.

2502 R. N. & H. C.—UNIVERSITY COLLEGE OF WALES, Aberystwyth.

Black-faced Mountain.¹

Class 301.—*Black-faced Mountain Rams, Two Shear and upwards.*

[7 entries, 1 absent.]

2508 I. (£10.) JOHN ROBSON, Newton, Bellingham, for Sir Matthew, born in 1906, bred by M. G. Hamilton, Woolloids, Cobbinshaw

2506 II. (£5.)—OCTAVIUS MONKHOUSE, Cowshill, Wearhead, Co. Durham, for Sir Henry, born in 1908, bred by M. G. Hamilton, Woolloids, Cobbinshaw.

2509 R. N. & H. C.—JOHN ROBSON, Newton, Bellingham.

Class 302.—*Black-faced Mountain Shearling Rams.*

[6 entries, 1 absent.]

2515 I. (£10.)—JOHN ROBSON, Newton, Bellingham.

2516 II. (£5.)—JOHN ROBSON, JUN., Lynegar, Watten, Caithness.

2514 R. N. & H. C.—OCTAVIUS MONKHOUSE, Cowshill, Wearhead

Class 303.—*Black-faced Mountain Shearling Ewes* [4 entries, none absent.]

2517 I. (£10.)—OCTAVIUS MONKHOUSE, Cowshill, Wearhead, for Queen Mary.

2519 II. (£5.)—JOHN ROBSON, Newton, Bellingham.

2518 R. N. & H. C.—OCTAVIUS MONKHOUSE, for Mountain Belle.

PIGS.

Large White Breed.

Class 304.—*Large White Boars, farrowed in 1907, 1908, or 1909.*

[10 entries, 5 absent.]

2530 I. (£10, & R. N. for Champion.)—ALFRED W. WHITE, Hillegom, Spalding, for Turk of Worsley 12833, born March 5, 1908; s. Turk of Spalding 10147, d. Sunshade 17474 by Mont Blanc 7843.

2523 II. (£5.)—THE EARL OF ELLESMERE, Worsley, Manchester, for Worsley Turk 6th 12975, born Jan. 8, 1909; s. Worsley Turk 4th 11217, d. Bottesford Marchington Queen 18128 by Bottesford Arthur 8487.

2525 III. (£3.)—SIR GILBERT GREENALL, BT. C.V.O., Walton Hall, Warrington, for Roger Boy, born Nov. 6, 1907, bred by T. Davis, Pottill Euton, Lampeter, s. Roger-son, d. Queen of Jellan 18034 by Bottesford Walton 8959.

2526 R. N. & H. C.—D. W. GUNN, Craigcrook Farm, Blackhall, Edinburgh, for Craigcrook King 2nd.

Class 305.—*Large White Boars, farrowed in 1910.²*

[11 entries, none absent.]

2532 I. (£10, & Champion.)—THE EARL OF ELLESMERE, Worsley, Manchester, for Worsley Turk 24th, born Jan. 9; s. Worsley Turk 4th 11217, d. Bottesford Marchington Queen 18128 by Bottesford Arthur 8487.

2533 II. (£5.)—THE EARL OF ELLESMERE, for Worsley Turk 25th, born Jan. 4; s. Worsley Turk 4th 11217, d. Worsley Hawthorn 30th 23818 by Samson of Worsley.

2541 III. (£3.)—ALFRED W. WHITE, Hillegom, Spalding, for Spalding Turk 4th 14055, born Jan. 24; s. Turk of Spalding 10147, d. Dame of Spalding 22664 by Worsley Roger.

2536 R. N. & H. C.—D. W. GUNN, for Craigcrook King 5th.

Class 306.—*Large White Boars, farrowed in 1911.* [35 entries, 1 absent.]

2545 I. (£10.) DANIEL R. DAYBELL, Bottesford, Nottingham, for boar, born Jan. 15; s. Mollington Jay of Bottesford 10865, d. Buttercup of Bottesford 24808 by Radium

¹ £15 towards these Prizes were given by Breeders of Black-faced Mountain Sheep.

² Champion Gold Medal given by the National Pig Breeders' Association for the best Boar or Sow in Classes 304-308.

³ Prizes given by the National Pig Breeders' Association.

c Award of Live Stock Prizes at Norwich, 1911.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 2551 II. (£5).—THE EARL OF ELLESMERE, Worsley, Manchester, for boar, born Jan. 6; s. Worsley Turk 4th 11217, d. Bottesford Empress 3rd 18714 by Borrowfield Ringleader 20th 6291.
 2568 III. (£3).—R. E. W. STEPHENSON, Tue Brook, Liverpool, for boar, born Jan 1; s. Bourne Giant Goliath 10631, d. Wyboston Bella 26718 by Bottesford Eclipse 10615.
 2574 IV. (£2).—W. H. & E. WHERRY, Bourne, for boar, born Jan 1; s. Bourne Counsellor 13321, d. Bourne Duchess 6th 27710 by Giant Goliath 9865.
 2543 E. N. & H. C.—DANIEL R. DAYBELL, Bottesford, Nottingham.

Class 307.—Large White Breeding Sows, farrowed in 1907, 1908, or 1909.

[14 entries, 2 absent.]

- 2579 I. (£10).—THE EARL OF ELLESMERE, Worsley, Manchester, for Worsley Marchington Queen 1st 26648, born Jan. 8, 1906, farrowed May 12; s. Worsley Turk 4th 11217, d. Bottesford Marchington Queen 18128 by Bottesford Arthur 8187.
 2586 II. (£5).—JOHN & ROBERT PURVIS, The Rookery, Wyboston, St. Neots, for Wyboston Ada 26892, born Jan. 2, 1909, farrowed Jan. 2; s. Peterborough City 10387, d. Beauty of Wyboston 20410 by Holywell Thick-un 9177.
 2590 III. (£3).—W. H. & E. WHERRY, Bourne, for Bramble Bush 22504, born July 6, 1907, farrowed Jan. 11, bred by the Earl of Ellesmere, Worsley, Manchester; s. Roger 7203, d. Worsley Hawthorn 7th 14900 by Ruddington Lad 5587.
 2580 E. N. & H. C.—THE EARL OF ELLESMERE, for Worsley Princess 52nd.

Class 308.—Large White Sows, farrowed in 1910. [18 entries, 1 absent.]

- 2592 I. (£10).—THE EARL OF ELLESMERE, Worsley, Manchester, for Worsley Empress 37th, born Jan. 2; s. Turk of Worsley 12833, d. Bottesford Empress 3rd 18714 by Borrowfield Ringleader 20th 6291.
 2593 II. (£5).—THE EARL OF ELLESMERE, for Worsley Miss 18th, born Jan. 4; s. Worsley Turk 4th 11217, d. Miss Russell Walker 25634 by Holywell Bourne 9161.
 2594 III. (£3).—THE EARL OF ELLESMERE, for Worsley Princess 80th, born Jan. 20; s. Worsley Turk 4th 11217, d. Worsley Princess 55th 23860 by Barkwith Joe 6895.
 2595 IV. (£2).—THE EARL OF ELLESMERE, for Worsley Princess 81st, born Jan. 20; s. Worsley Turk 4th 11217, d. Worsley Princess 55th 23860 by Barkwith Joe 6895.
 2608 E. N. & H. C.—W. H. & E. WHERRY, Bourne, for Bonnie Beatrice 14th.

Class 309.—Three Large White Sows, farrowed in 1911.

[14 entries, 4 absent.]

- 2600 I. (£10).—DANIEL R. DAYBELL, Bottesford, Nottingham, for sows, born Jan. 5; s. Mollington Jay of Bottesford 10965, d. Bottesford Empress 6th 20496 by Ruddington Eclipse of Bottesford 10081.
 2611 II. (£5).—THE EARL OF ELLESMERE, Worsley, Manchester, for sows, born Jan. 4 and 6; s. Worsley Turk 4th 11217 and Drendnought 2nd 12477, ds. Worsley Empress 16th by Roger 7203, Lady Rose 4th 21080 by Peterborough Marquis 10045, Bottesford Empress 3rd 18714 by Borrowfield Ringleader 20th 6291.
 2621 III. (£3).—W. H. & E. WHERRY, Bourne, for sows, born Jan. 1; s. Bourne Counsellor 13321, d. Bourne Duchess 6th 27710 by Giant Goliath 9865.
 2612 IV. (£2).—THE EARL OF ELLESMERE, for sows, born Jan. 6; s. Emperor of Worsley 10791, d. Worsley Hope 4th 21854 by Worsley Eclipse 9th 9365.
 2615 E. N. & H. C.—LORD LUCAS, West Park, Amptill.

Middle White Breed.

Class 310.—Middle White Boars, farrowed in 1907, 1908, or 1909.

[6 entries, 1 absent.]

- 2628 I. (£10, & E. N. for Champion.¹)—CHARLES SPENCER, Holywell Manor, St. Ives, for Holywell Jonathan 14435, born July 22, 1909; s. Olley John 7305, d. Holywell Colony Grace 17718 by Holywell Count Curley 5713.
 2625 II. (£5).—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Walton Clumber 5th 12107, born Jan. 16, 1908; s. Walton Clumber 4th 9427, d. Walton Rose 67th 22130 by Olley John 7395.
 2623 III. (£3).—THE DUKE OF ARGYLL, K.T., Rosneath Castle, Dumbartonshire, for Wharfedale Jester 13120, born Jan. 30, 1909, bred by L. C. Paget, Middlethorpe Hall, York; s. Devon Bill 11243, d. Wharfedale Frolic 3rd 24216 by Olley Dandy 9417.
 2626 E. N. & H. C.—SIR GILBERT GREENALL, BT., C.V.O., for Walton Clumber 6th

Class 311.—Middle White Boars, farrowed in 1910.²

[7 entries, none absent.]

- 2635 I. (£10).—CHARLES SPENCER, Holywell Manor, St. Ives, for Sefton Holywell, born Jan. 14, bred by the Earl of Sefton, Croxteth Park, Liverpool; s. Tarbock Clumber 12101, d. Tarbock Patti 20th 22098 by Walton Turret 12th 9453.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best Boar or Sow in Classes 310-314.

Award of Live Stock Prizes at Norwich, 1911. ci

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2634 II. (£5.)—CHARLES SPENCER, for Holywell Wrestler, born April 1; s. The Abbot of Colleshill 12105, d. Holywell Rosella 2nd 24001 by Holywell Rosario 8857.

2630 III. (£3.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for Wharfedale Tartar, born Jan. 7; s. Tarbock Turret 3rd 11315, d. Walton Rose 30th 16350 by Walton Dainty 3rd 8201.

2620 R. N. & H. C. SIR GILBERT GREENALL, BT., C.V.O., for Walton Manchester.

Class 312.—*Middle White Boars, farrowed in 1911.*

[15 entries, 3 absent.]

2644 I. (£10), 2643 II. (£5), & 2645 III. (£3.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for boars, born Jan. 2; s. Wharfedale Reveller 11329, d. Wharfedale Marguerite 27194 by Wharfedale Flash 13127.

2641 R. N. & H. C.—W. B. HILL, Underhill Farm, Cannock Road, nr. Wolverhampton.

Class 313.—*Middle White Breeding Sows, farrowed in 1907, 1908, or 1909.*

[6 entries, 2 absent.]

2656 I. (£10, & Champion.)—CHARLES SPENCER, Holywell Manor, St. Ives, for Holywell Yorkshire Rose, born Aug. 21, 1909, farrowed Feb. 2; s. Holywell Middleton 3rd 13045, d. Holywell Rosella 2nd 24082 by Holywell Rosario 8857.

2651 II. (£5.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Walton Rose 68th 24194, born Oct. 5, 1907, farrowed Jan. 23; s. Southampton Prince 10317, d. Walton Rose 48th 17780 by Walton Rufus 8215.

2654 III. (£3.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for Wharfedale Pansy 27200, born Jan. 2, 1909, farrowed Feb. 4; s. Manchester of Holywell 11293, d. Tarbock Pattie 21st 22100 by Walton Turret 12th 9458.

2655 R. N. & H. C.—CHARLES SPENCER, for Holywell Rosella 1st.

Class 314.—*Middle White Sows, farrowed in 1910.* [8 entries, none absent.]

2663 I. (£10.)—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for Tarbock Pattie 50th, born Jan. 11; s. Tarbock Clumber 12101, d. Tarbock Pattie 20th 22093 by Walton Turret 12th 9453.

2660 II. (£5.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for Wharfedale Joyful, born Feb. 21; s. Wharfedale Reveller 11329, d. Pendley Queen 1st 24138 by First Choice of Pendley 10277.

2658 III. (£3.)—SIR GILBERT GREENALL, BT., C.V.O., Walton Hall, Warrington, for Walton Susie 8th, born Jan. 18; s. Manchester of Walton 13059, d. Bunk Hey Susie 21902 by Brockhall Clumber 10265.

2659 R. N. & H. C.—SIR GILBERT GREENALL, BT., C.V.O., for Walton Susie 9th.

Class 315.—*Three Middle White Sows, farrowed in 1911.*

[9 entries, none absent.]

2668 I. (£10.)—LEOPOLD C. PAGET, Middlethorpe Hall, York, for sows, born Jan. 2; s. Wharfedale Reveller 11329, d. Wharfedale Marguerite 27194 by Wharfedale Flash 13127.

2666 II. (£5.)—H. R. BEETON, Hammonds, Cheekendon, Reading, for sows, born Jan. 2; s. Tarbock Prince 3rd 13105, d. Her Highness of Hammonds 20990 by Dictator 12051.

2672 III. (£3.)—THE EARL OF SEFTON, Croxteth Hall, Liverpool, for sows, born Jan. 28; s. Halsnead Prince 13033, d. Tarbock Patty 18th 22084 by Walton Turret 12th 9453.

2671 R. N. & H. C.—THE EARL OF SEFTON, Croxteth Hall, Liverpool.

Tamworth Breed.

Class 316.—*Tamworth Boars, farrowed in 1907, 1908, or 1909.*

[7 entries, none absent.]

2677 I. (£10.) ROBERT IBBOTSON, The Hawthorns, Knowle, Warwickshire, for Knowle Bursleigh 13137, born Aug. 2, 1909; s. Knowle Lord Cromer 11385, d. Knowle Sylvia 2nd 24340 by Knowle King Solomon 10407.

2676 II. (£5.)—LORD HASTINGS, Melton Constable Park, Norfolk, for Knowle Archbishop 12185, born July 12, 1908, bred by Robert Ibbotson, Knowle, Warwickshire; s. Bishop of Knowle 11337, d. Knowle Chestnut 10th 20138 by Knowle Druid 10885.

2678 III. (£3.) MRS. EDWARD MORANT, Brokenhurst Park, Hants, for Dick of Osmaston 13143, born July 12, 1909, bred by R. Whittingham, Hollington Brailford; s. Rufus of Osmaston 11435, d. Wallflower 22318 by Osmaston Jim 11435.

2680 R. N. & H. C.—SIR PETER C. WALKER, BT., Osmaston Manor, Derby, for Elford Bishop.

¹ Champion Gold Medal given by the National Pig Breeders' Association for the best Boar or Sow in Classes 310-314.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

Class 317.—*Tamworth Boars, farrowed in 1910.*¹ [6 entries, none absent.]

- 2084 I. (£10.)—W. H. MITCHELL, Elmdene, Kemilworth, for **Dandy of Elmdene** 11519, born Jan. 21, bred by Mr. Edward Morant, Brokenhurst Park, Hants.; s. Forester of Dilton 13179, d. Megallie of Dilton 22270 by Middleton Matoppe 9537.
 2682 II. (£5.)—ROBERT IBBOTSON, The Hawthorns, Knowle, Warwickshire for **Knowle Sylvanus** 14617, born Jan. 3. s. Knowle Lord Minto 12191, d. Knowle Sylvia 2nd 21310 by Knowle King Solomon 10407.
 2685 III. (£3.)—MRS. EDWARD MORANT, Brokenhurst Park, Hants., for **Dilton Duke**, born Jan. 21. s. Forester of Dilton 13179, d. Megallie of Dilton 22270 by Middleton Matoppe 9537.
 2681 R. N. & H. C.—EGBERT DE HAMEL, Middleton Hall, Tamworth

Class 318.—*Tamworth Boars, farrowed in 1911.* [20 entries, none absent.]

- 2704 I. (£10.) & 2703 II. (£5.)—HENRY C STEPHENS, Cholderton Lodge, Salisbury, for **boar**, born Jan. 2; s. Duke of Gloucester 12177, d. Red Queen 22191 by Rolleston Victor 8375
 2699 III. (£3.)—SIR OSWALD MOSLEY, BT, Rolleston Hall, Burton-on-Trent, for **boar**, born Jan. 1; s. Mike, d. Rolleston Vetch 2nd by Sweet William 10511.
 2691 IV. (£2.)—LORD HASTINGS, Melton Constable Park, Norfolk, for **Melton Sol**, born Jan. 1; s. Adolphus of Roxley 13137, d. Melton Constance by Knowle Archbishop 12185
 2693 R. N. & H. C.—ROBERT IBBOTSON, The Hawthorns, Knowle, Warwickshire.

Class 319.—*Tamworth Breeding Sows, farrowed in 1907, 1908, or 1909.*

[13 entries, none absent.]

- 2715 I. (£10. & Champion.²)—SIR OSWALD MOSLEY, BT, Rolleston Hall, Burton-on-Trent, for **Rolleston Verbena** 2nd 27428, born June 4, 1908, farrowed March 22; s. Sweet William 10511, d. Rolleston Verbena 20292 by Knowle Neptune 8957.
 2707 II. (£5.)—EGBERT DE HAMEL, Middleton Hall, Tamworth, for **Middleton Mawenzi**, born Jan. 4, 1909, farrowed Jan. 3; s. Gay Lad of Middleton 12181, d. Middleton Microcosma 24364 by Middleton Majestic 8971.
 2719 III. (£3.)—SIR PETER C. WALKER, BT, Osmaston Manor, Derby, for **Osmaston Ivy** 27396, born Jan. 13, 1909, farrowed Jan. 4; s. Rufus of Osmaston 11435, d. Ivy of Osmaston 22198 by Director of Whitacre 10381
 2711 R. N. & H. C.—ROBERT IBBOTSON, The Hawthorns, Knowle, for **Knowle Ruby**.

Class 320.—*Tamworth Sows, farrowed in 1910.* [8 entries, none absent.]

- 2721 I. (£10. & R. N. for Champion.³)—ROBERT IBBOTSON, The Hawthorns, Knowle, Warwickshire, for **Knowle Constance** 31156, born Jan. 16; s. Knowle Lord Minto 12191, d. Constance 22166 by Scarlet Gem 9553
 2726 II. (£5.)—MRS. EDWARD MORANT, Brokenhurst Park, Hants., for **Dilton Tiger Lily**, born Jan. 21; s. Forester of Dilton 13179, d. Megallie of Dilton 22270 by Middleton Matoppe 9537.
 2725 III. (£3.)—MRS. EDWARD MORANT, for **Dilton Princess**, born Jan. 21; s. Forester of Dilton 13179, d. Megallie of Dilton 22270 by Middleton Matoppe 9537.
 2720 R. N. & H. C.—EGBERT DE HAMEL, Middleton Hall, Tamworth.

Class 321.—*Three Tamworth Sows, farrowed in 1911.*

[10 entries, none absent.]

- 2736 I. (£10.) OSWALD U. H. RILEY, The Brange, Putley, Ledbury, for **sows**, born Jan. 7; s. Croesus 12137, d. Ambrosia of Osmaston 27218 by Rufus of Osmaston 11435,
 2733 II. (£5.)—W. H. MITCHELL, Elmdene, Kemilworth, for **sows**, born Feb. 12; s. Dandy of Elmdene 14649, d. Elmdene Matron 7th 31749 by Knowle Nestor 10439.
 2728 III. (£3.)—LORD HASTINGS, Melton Constable Park, Norfolk, for **Melton Bubble**, Melton Squeak, and Melton Carrots, born Jan. 1; s. Adolphus of Roxley 13137, d. Melton Constance by Knowle Archbishop 12185.
 2735 R. N. & H. C.—SIR OSWALD MOSLEY, BT, Rolleston Hall, Burton-on-Trent.

Berkshire Breed.

Class 322.—*Berkshire Boars, farrowed in 1907, 1908, or 1909.*

[9 entries, 2 absent.]

- 2744 I. (£10. & R. N. for Champion.³)—THE HON. CLAUD B. PORTMAN, Goldcote, Stratford-on-Avon, for **Goldcote John** 15003, born July 29, 1909, bred by R. O. B. Portman Goldcote; s. Peter Simple 1384, d. Danesfield Java 12861 by Okeford Emperor 10779.

¹ Prizes given by the National Pig Breeders' Association

² Champion Gold Medal given by the National Pig Breeders' Association for the best Boar or Sow in Classes 316-320.

³ Champion Prize of £5 5s. given by the British Berkshire Society for the best Boar or Sow in Classes 322-326.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

2713 II. (£5.)—D. E. HUGHAM, Coombelands, Addlestone, for Thoresby Champion Belman 1432, born June 27, 1908, bred by Earl Manvers, Thoresby Park, Notts.; s. Thoresby Champion 12611, d. Thoresby Bluebell 1st 12531 by Highmoor Mikado 10433.

2745 III. (£3.)—SAMUEL SANDAY, Puddington Hall, Chester, for Whitley Duke 2nd 14544, born April 30, 1908, bred by the Reading Corporation, Manor Farm, Reading; s. Dudley Lad 10800, d. Whitley Princess 11723 by Dancesfield Bowler 9050.

2740 R. N. & H. C.—VISCOUNT CHETWYND, Wyndthorpe, Doncaster, for Conqueror.

Class 323.—Berkshire Boars, farrowed in 1910.¹ [8 entries, none absent.]

2719 I. (£10.)—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for Oxford Viscount, born Jan. 13, bred by the Hon. A. Holland Hibbert, Munden, Watford; s. Munden Champion 12735, d. Lincoln Beauty 13217 by Munden Viscount 10885.

2751 II. (£5.)—L. CURRIE, Minley Manor, Farnborough, for Minley Master 15096, born Jan. 18; s. Compton Supreme 13989, d. Highmoor Tata 11812 by Highmoor Mikado 10433.

2753 III. (£3.)—W. V. JUDD, Eastanton, Andover, for boar, born April 13, bred by the Herrison County Asylum Authorities, Dorchester; s. Wallace 2nd 14397, d. Highclere Kitty 13105 by Sailor Prince 11936.

2747 R. N. & H. C.—F. H. ANSTRUTHER GOUGH CALTHORPE, Elvetham Hall, Winchfield, for Elvetham Topper 2nd.

Class 324.—Berkshire Boars, farrowed in 1911. [11 entries, none absent.]

2764 I. (£10.)—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds, for boar, born Jan. 5; s. Curioso 14861, d. Hilary 14398 by James 1st 13437.

2765 II. (£5.)—SAMUEL SANDAY, Puddington Hall, Chester, for boar, born Jan. 25; s. Whitley Duke 2nd 14544, d. Polegate Dorothy 13948 by Harold H. 10238.

2781 III. (£3.) & 2782 R. N. & H. C.—JULIUS A. FRICKER, Suddon Grange, Wincanton, for boars, born Jan. 5; s. Robert 14635, d. Suddon Behnda 12994 by Hightide F.B. 9373.

Class 325.—Berkshire Breeding Sows, farrowed in 1907, 1908, or 1909.

[11 entries, none absent.]

2771 I. (£10.)—D. E. HUGHAM, Coombelands, Addlestone, for Polegate Dulcimer 13650, born March 4, 1908, farrowed Jan. 2, bred by the Duchess of Devonshire, Eastbourne; s. Harold H. 10238, d. Polegate Dulce 9817 by Cecil Augustus 7756.

2768 II. (£5.)—L. CURRIE, Minley Manor, Farnborough, for Minley Prudence 13906, born May 17, 1908, farrowed Jan. 8; s. Highmoor Viscount 12721, d. Pearl of Minley 13480 by Simpleton 11428.

2769 III. (£3.)—L. CURRIE, for Motcombe Kitty 14628 born Jan. 2, 1909, farrowed Jan. 7, bred by N. Benjafield, Motcombe, Dorset; s. Dorset Edward 14007, d. Motcombe Berberry 12308 by Commander-in-Chief 10090.

2772 R. N. & H. C.—J. JEFFERSON, Willaston, Nantwich, for Crewe Rosebud.

Class 326.—Berkshire Sows, farrowed in 1910. [18 entries, 1 absent.]

2792 I. (£10. & Champion.)²—W. V. JUDD, Eastanton, Andover, for Reform 15300, born June 3, bred by R. B. Vincent, Compton Valence, Dorchester; s. Wyndthorpe Canton 14224, d. Compton Fair Lady 14657 by Victor Rex 13990.

2770 II. (£5.)—WILFRED BUCKLEY, Moundsmere Manor, Basingstoke, for Thorn 15044, born March 2, bred by R. B. Vincent, Compton Valence, Dorchester; s. Sir Frank 14656, d. Compton Briar 12268 by Supreme Boy 9743.

2793 III. (£3.)—SAMUEL SANDAY, Puddington Hall, Chester, for Puddington Princess Royal 15409, born Feb. 2; s. Whitley Duke 2nd 14544, d. Polegate Dorothy 13948 by Harold H. 10238.

2790 IV. (£2.)—J. JEFFERSON, Willaston, Nantwich, for Crewe Moss Rose 15560, born Jan. 4; s. Crewe Sensation 15140, d. Crewe Rosa 15018 by Whitley Duke 12606.

2782 R. N. & H. C.—L. CURRIE, Minley Manor, Farnborough, for Minley Governess.

Class 327.—Three Berkshire Sows, farrowed in 1911.

[9 entries, 1 absent.]

2803 I. (£10.)—SAMUEL SANDAY, Puddington Hall, Chester, for sows, born Jan. 25; s. Whitley Duke 2nd 14544, d. Polegate Dorothy 13948 by Harold H. 10238.

2801 II. (£5.)—J. JEFFERSON, Willaston, Nantwich, for sows, born Jan. 3; s. Crewe Sensation 15140, d. Crewe Rosebud 15557 by His Lordship 9337.

2802 III. (£3.)—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds, for sows, born Jan. 2 and 5; ss. Bullion 14732 and Curioso 14861, ds. Highclere Honesty 14011, Hilary 14398 by Highclere Homo 12859 and James 1st 13437.

2797 R. N. & H. C.—VISCOUNT CHETWYND, Wyndthorpe, Doncaster.

¹ Prizes given by the British Berkshire Society.

² Champion Prize of £5 5s. given by the British Berkshire Society for the best Boar or Sow in Classes 322-326.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

Large Black Breed.

Class 328.—Large Black Boars, farrowed in 1907, 1908, or 1909.

[8 entries, none absent.]

- 2805 I. (£10, & Champion.¹)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Drayton Disappointment 3337, born July 26, 1909; s. Drayton Demon 4th 2353, d. Drayton Dainty 8th 7148 by Henley Achilles 1899.
 2810 II. (£5.)—STANLEY A. STIMPSON, Manor House, Arminghall, Norwich, for Bixley None Such 3095, born March 6, 1909, bred by J. B. Dimmock, Shotford Hall, Norfolk; s. Cornwall Jim 3007, d. Henham Starkie Bee 5th 52828 by Bostall Black Boy 1287.
 2804 III. (£3.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Saint 2751, born March 1, 1908; s. Sudbourne Prince 2307, d. Sudbourne Sarah A 4596 by Iford Baron 587.
 2806 R. N. & H. C.—TERAH F. HOOLEY, for Drayton Valesman

Class 329.—Large Black Boars, farrowed in 1910.²

[11 entries, none absent.]

- 2812 I. (£10, & R. N. for Champion.¹)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Top Hole 3323, born Jan. 3; s. Drayton Dodger 2nd 2585, d. Sudbourne Toppin 8268 by Sudbourne Masterpiece 2305
 2815 II. (£5.)—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham, for Tarcows Pride 3341, born Feb. 23; s. Pride of Toy 3037, d. Tartar Princess 41st 7131 by Trevescote Prince 657.
 2817 III. (£3.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Drayton Victor 3307, born Feb. 23; s. Drayton Demon 4th 2353, d. Drayton Diadem 4th 7680 by Henley Achilles 1899.
 2820 R. N. & H. C.—C. F. MARRINER, Hasketon, Woodbridge, for Hasketon Royal George.

Class 330.—Large Black Boars, farrowed in 1911. [18 entries, none absent.]

- 2828 I. (£10.)—THOMAS GOODCHILD, Great Yeldham Hall, Castle Hedingham, for boar, born Jan. 9; s. Bentley Budget 3035, d. Tartar Princess 88th 7128 by Trevescote Prince 657.
 2839 II. (£5.)—THOMAS WARNE, Trevisquite Manor, St. Mabyn, Cornwall, for Trevisquite Budget, born Jan. 2; s. Trekelland Masterpiece 2267, d. Trevisquite Content 4th 6934 by Trevisquite Confidence 1203.
 2833 III. (£3.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for boar, born Jan. 4; s. Nigger 2597, d. Sudbourne Joker 1st 8258 by Sudbourne Masterpiece 2305.
 2836 IV. (£2.)—JOHN WARNE, Treveglis, St. Mabyn, Cornwall, for boar, born Jan. 23; s. Sudbourne Jock 3005, d. Treveglis Lass 2nd 6220 by Trevisquite Confidence 1203
 2825 R. N. & H. C.—F. G. S. CLERINNEW, Oaklands Park, Tolleshunt Knights, Witham

Class 331.—Large Black Breeding Sows, farrowed in 1907, 1908, or 1909.

[8 entries, 3 absent.]

- 2845 I. (£10, & R. N. for Champion.¹)—C. F. MARRINER, Hasketon, Woodbridge, for Hasketon Long Bess 18th 8638, born Jan. 27, 1909, farrowed Jan. 9; s. Lux Rex 1189, d. Hasketon Long Bess 4th 4156 by Black King 545.
 2844 II. (£5.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Drayton Lucky Girl 8490, born Jan. 31, 1909, farrowed Feb. 5; s. Drayton Demon 4th 2353, d. Stroud Missie 3rd 6498 by Bostall Masterpiece 841.
 2847 III. (£3.)—C. F. MARRINER, for Hasketon Long Lady 4th 7272, born Jan. 7, 1907, farrowed Feb. 13; s. Lux Rex 1189, d. Long Lady 1808 by Laurenceton Duke 375.
 2846 R. N. & H. C.—C. F. MARRINER, for Hasketon Long Bess 19th.

Class 332.—Large Black Sows, farrowed in 1910. [18 entries, 2 absent.]

- 2849 I. (£10, & Champion.¹)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for Sudbourne Sadie 9410, born Jan. 3; s. Nigger 2597, d. Sudbourne Maid 7318 by Sudbourne Surprise 1723.
 2859 II. (£5.)—C. F. MARRINER, Hasketon, Woodbridge, for Hasketon Queen Mary 1st 9206, born Jan. 2, s. Hasketon Rodmanson 13th 2149, d. Hasketon Polly Frith 2nd 7872 by Hasketon Black King 4th 1120.
 2865 III. (£3.)—THOMAS WARNE, Trevisquite Manor, St. Mabyn, for Levelsides 9020, born Feb. 10, bred by G. James, Grampound Road, Cornwall; s. Wonder of the West 3017, d. Goodameavey Sunset 5076 by Goodameavey Cyclone 1183.

¹ Champion Prize of £10 given by the Large Black Pig Society for the best Boar in Classes 328-330.

² Prizes given by the Large Black Pig Society.

³ Silver Challenge Cup given by the Large Black Pig Society for the best Sow in Classes 331 and 332.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor."]

- 2861 IV. (£2.)—JOHN WARNE, Treveglow, St. Mabyn, for Treveglow Godiva 2nd 9576, born Jan. 10; s. Leviathan 2037, d. Treveglow Godiva 7968 by Treveglow Pride 2321.
2853 R. N. & H. C.—THOMAS GOODCHILD, for Tartar Princess 46th.

Class 333.—*Three Large Black Sows, farrowed in 1911.*

[12 entries, 2 absent.]

- 2887 I. (£10.)—KENNETH M. CLARK, Sudbourne Hall, Orford, Suffolk, for sows, born Jan. 4: s. Nigger 2507, d. Sudbourne Jolly 8022 by Sudbourne Masterpiece 2305.
2878 II. (£5.)—W. & U. WHITLEY, Primley Farm, Paignton, for sows, born Jan. 8: s. Tiptree 1st 2043, d. Brent Sapphire 6604 by Cornwood King 1407.
2871 III. (£3.)—THOMAS GOODCHILD, Great Yeldham Hall, Cattle Hedingham, for sows, born Jan. 7 and 9: s. Bentley Budget 3035, d. Tartar Princess 30th 5978 and Tartar Princess 38th 7128 by Trescowe Prince 857.
2872 IV. (£2.)—TERAH F. HOOLEY, Dry Drayton, Cambridge, for Drayton Faith 9722, Drayton Hope 9724, and Drayton Charity 9726, born Jan. 3; s. Henley Victor 2917, d. Marchioness 7th 7580 by The Prior 1427.
2877 R. N. & H. C.—THOMAS WARNE, for Trevisquite Toffy, Trevisquite Souvenir, and Trevisquite Fair Maid.

Lincolnshire Curly-coated Breed.

Class 334.—*Lincolnshire Curly-coated Boars, farrowed in 1907, 1908, or 1909.*

[5 entries, 1 absent.]

- 2882 I. (£10.)—LEOPOLD C. HARVEY, Spalding, for Londesborough Prince 1125, born Jan. 2, 1909, bred by Earl of Londesborough, Blankney Hall, Lincoln; s. Londesborough Emperor 805, d. Londesborough Royal Duchess 2758 by Havenhouse Top Score 465.
2870 II. (£5.)—HENRY CAUDWELL, Old Leake, Boston, for Midville Prince 2nd 1147, born Jan. 26, 1909; s. Midville Royal 820, d. Midville Queen 3792 by Midville Bob 223.
2883 III. (£3.)—H. F. STENNETT, Gainsborough, for Gainsborough's Masterpiece 149, born Jan. 1907, bred by T. Ward & Son, Carrington Grange; s. Midville Bob 223, d. Lendenhall Active 514 by Lendenhall Toby 193.

Class 335.—*Lincolnshire Curly-coated Boars, farrowed in 1910.*¹

[7 entries, none absent.]

- 2887 I. (£10, & R. N. for Champion.)—HENRY CAUDWELL, Old Leake, Boston, for Egir Spearman, born Jan. 4, bred by D. Swanston, Gainsborough; s. See Saw 651, d. Egir Sally 3414 by Gainsborough's Masterpiece 449.
2889 II. (£5.)—LEOPOLD C. HARVEY, Spalding, for Marshland Magistrate, born in Feb., bred by H. G. Thorpe, Hemswell Grange, Lincoln; s. Hemswell Midville 1099, d. Ruston's Choice 724 by Hemswell King 151.
2886 III. (£3.)—WILLIAM BRAY, East Keal, Spilsby, for Keal Wainfleet, born in Jan., bred by C. W. Tindall, Wainfleet; s. Quadding Chestnut 835, d. St. Mary's 5th 3074 by Quarrington Conqueror 551.

Class 336.—*Lincolnshire Curly-coated Boars, farrowed in 1911.*

[14 entries, 1 absent.]

- 2898 I. (£10, & Champion.)—LEOPOLD C. HARVEY, Spalding, for Marshland Dreadnought, born in Jan., bred by F. E. Bowser, Wigtoft, Boston; s. Fireby Dreadnought, d. Wigtoft Rosebud 8228, by Quadding Ash 539.
2894 II. (£5.)—HENRY CAUDWELL, Old Leake, Boston, for Midville Chance, born Jan. 13; s. Egir Spearman, d. Midville Green Girl by Londesborough Emperor 805.
2801 III. (£3.)—J. H. SMITH, Firsby, Spilsby, for boar, born Jan. 21; s. Baumber Defiance 971, d. Firsby Belle 1874 by Fireby Admiral 441.
2895 IV. (£2.)—H. J. COOKE, Postland, Crowland, Peterborough, for boar, born Jan. 14; s. Holbeach Hero 2nd 1203, d. Peterboro' Bess 4064 by Peterboro' Boar 903.

Class 337.—*Lincolnshire Curly-coated Breeding Sows, farrowed in 1907, 1908, or 1909.* [12 entries, none absent.]

- 2813 I. (£10, & Champion.)—LEOPOLD C. HARVEY, Spalding, for Londesborough Royal Duchess 2758, born Jan., 1908, farrowed Feb. 2, bred by J. H. Smith, Firsby, Spilsby; s. Havenhouse Top Score 465, d. Fireby Amazon 288 by Seeping Knight 287.
2807 II. (£5.)—HENRY CAUDWELL, Old Leake, Boston, for Midville Lilly 3264, born Jan. 15, 1908, farrowed Feb. 11; s. Midville Keal 523, d. Midville Beauty 3rd 598 by Midville Canswell 221.

¹ Prizes given by the Lincolnshire Curly-coated Pig Breeders' Association.

² Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Boar in Classes 334-336.

³ Champion Prize of £5 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Sow in Classes 337 and 338.

[Unless otherwise stated, each prize animal named below was "bred by exhibitor"]

2908 III. (£3).—GEORGE FREIR, Tolethorpe House, Deeping St. Nicholas, Spalding, for Deeping Pride 5th 2334, born Sept. 1907, farrowed Jan 10; s. Crowland Chief 390, d. Deeping Pride 2nd 158 by Crowland Tom 39.

2909 IV. (£2).—GEORGE FREIR, for Deeping Pride 26th, born March 10, 1909, farrowed Feb. 10; s. Carrington Grange Cedric 797, d. Deeping Pride 5th 2334 by Crowland Chief 399.

2916 R. N. & H. C.—H. F. STENNETT, Gainsborough, for Gainsborough's Countess.

Class 338.—*Lincolnshire Curly-coated Sows, farrowed in 1910.*

[11 entries, 1 absent.]

2925 I. (£10, & R. N. for Champion.)—LEOPOLD C. HARVEY, Spalding, for Marshland Margaret, born in Jan., bred by C. E. Harris & Sons, Great Hale Fen, Heckington; s. Elm Bob 925, d. Hale Alice 2nd 2508 by Hale Duke 127.

2919 II. (£5).—FREDERICK J. CAUDWELL, Old Leake, Boston, for Osborne Diana, born Jan. 12, bred by Mowbray Bros., Gosberton, Spalding; s. Waplede Curly 3rd 627, d. Osborne Cowslip 4056 by Osborne Bacon 1175.

2923 III. (£3).—C. E. HARRIS & SONS, Great Hale Fen, Heckington, Lincs., for Hale Jess 12th, born Feb 14; s. Firby Dreadnought 1059, d. Hale Jess 2nd 2508 by Hale Duke.

2921 IV. (£2).—JOHN COOK, Western Hills, Spalding, for Wigtoft Curly Coat 5958, born Feb. 3, bred by F. E. Bowser, Wigtoft, Boston; s. Caythorpe Curly Coat 671, d. Wigtoft Rosebud 1st 3222 by Quadring Ash 539.

2927 R. N. & H. C.—MRS. R. WATSON, Temple Bruer, Wellnore, for Temple Pink.

Class 339.—*Three Lincolnshire Curly-coated Sows, farrowed in 1911.*

[9 entries, none absent.]

2936 I. (£10).—C. W. TINDALL, Wainfleet Hall, Lincs., for sows, born Jan. 5, bred by J. P. L. Hodson, Marsh Farm, Wainfleet; s. Temple Friar 1309, d. Gibraltar Belle 5th by Firby Commodore 735.

2929 II. (£5).—HENRY CAUDWELL, Old Leake, Boston, for Midville Pride 1st, 2nd, and 3rd, born Jan. 3; s. Caythorpe Emperor, d. Midville Duchess 11th by Midville Royal 829.

2933 III. (£3).—LEOPOLD C. HARVEY, Spalding, for sows, born in Jan.; s. London borough Prince 1125, d. Marshland Martha by Postland Charlie 1183.

2932 R. N. & H. C.—GEORGE GODSON, Asgarby, Heckington, Lincs.

POULTRY.

By "Cock," "Hen," "Drake," "Duck," "Gander," and "Goose," are meant birds hatched previous to January 1, 1911, and by "Cockerel," "Pullet," "Young Drake," and "Duckling," are meant birds hatched in 1911, previous to June 1.

Class 340.—*Old English Game Spangled Cocks.* [7 entries, none absent.]

6 I. (30s.), & 4 II. (20s.).—WALTER FIRTH, Read, Blackburn.

7 III. (10s.).—MURRAY LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.

3 R. N. & H. C.—MISS R. B. BABCOCK, Rimington, Clitheroe.

Class 341.—*Old English Game Spangled Hens.* [5 entries, none absent.]

8 I. (30s.), & 13 R. N. & H. C.—WALTER FIRTH, Read, Blackburn.

10 II. (20s.).—W. & J. H. HEYS, West Villa, Facit, Rochdale.

11 III. (10s.).—MRS. T. T. ROBINSON, Blennerhasset, Carlisle.

Class 342.—*Old English Game Black-Red Cocks.* [11 entries, 1 absent.]

17 I. (30s.).—W. & J. H. HEYS, West Villa, Facit, Rochdale.

15 II. (20s.), & 18 III. (10s.).—WALTER FIRTH, Read, Blackburn.

19 R. N. & H. C.—CHARLES NICHOLSON, Great Clifton, Workington.

Class 343.—*Old English Game Clay or Wheaten Hens.*

[9 entries, none absent.]

27 I. (30s.).—T. C. HEATH, Keele, Newcastle, Staffs.

28 II. (20s.).—W. & J. H. HEYS, West Villa, Facit, Rochdale.

31 III. (10s.).—MRS. T. T. ROBINSON, Blennerhasset, Carlisle.

24 R. N. & H. C.—MISS R. B. BABCOCK, Rimington, Clitheroe.

¹ Champion Prize of 25 5s. given by the Lincolnshire Curly-coated Pig Breeders' Association for the best Sow in Classes 337 and 338.

Award of Poultry Prizes at Norwich, 1911. cvii

Class 344. *Old English Game Cocks, any other colour.*

[12 entries, none absent.]

- 37 I. (30s.) W. & J. H. HEYS, West Villa, Facit, Rochdale.
 38 II. (20s.) T. C. HEATH, Keele, Newcastle, Staffs.
 40 III. (10s.) JAMES R. CROMPTON, Brandleme House, Bury.
 42 R. N. & H. C.—MRS. T. T. ROBINSON, Blennerhasset, Carlisle.

Class 345. *Old English Game Hens, any other colour.*

[9 entries, 2 absent.]

- 52 I. (30s.) MRS. T. T. ROBINSON, Blennerhasset, Carlisle.
 55 II. (20s.)—MISS R. B. BABCOCK, Rimington, Clitheroe.
 58 III. (10s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 61 R. N. & H. C.—A. FALKNER NICHOLSON, Highfield Hall, Leek.

Class 346.—*Old English Game Cockerels, any colour.*

[7 entries, none absent.]

- 60 I. (30s.), & 56 II. (20s.)—WALTER FIRTH, Read, Blackburn.
 55 III. (10s.)—MISS R. B. BABCOCK, Rimington, Clitheroe.
 58 R. N. & H. C.—LAMBERT BROTHERS, East View, Sliden.

Class 347.—*Old English Game Pullets, any colour.* [11 entries, 1 absent.]

- 64 I. (30s.), & 68 II. (20s.)—WALTER FIRTH, Read, Blackburn.
 67 III. (10s.)—A. FALKNER NICHOLSON, Highfield Hall, Leek.
 66 R. N. & H. C. J. E. D. MOYSEY, Venton, Totnes.

Class 348.—*Indian Game Cocks or Cockerels.* [10 entries, 1 absent.]

- 78 I. (30s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
 75 II. (20s.)—WALTER FIRTH, Read, Blackburn.
 74 III. (10s.)—COOPER COOPER & CO., The Beeches, Warren Road, Chingford.
 72 R. N. & H. C. WILLIAM BRENT, Clampit, Callington.

Class 349.—*Indian Game Hens or Pullets.* [9 entries, 1 absent.]

- 86 I. (30s.)—WALTER FIRTH, Read, Blackburn.
 89 II. (20s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
 83 III. (10s.) WILLIAM BRENT, Clampit, Callington.
 85 R. N. & H. C. COOPER COOPER & CO., The Beeches, Warren Road, Chingford.

Class 350.—*Modern Game Cocks or Cockerels, any colour.*

[2 entries.]

- 91 I. (30s.), & 92 II. (20s.)—WALTER FIRTH, Read, Blackburn.

Class 351.—*Modern Game Hens or Pullets, any colour.*

[2 entries.]

- 94 I. (30s.), & 93 II. (20s.)—WALTER FIRTH, Read, Blackburn.

Class 352.—*Black Sumatra Game Cocks or Cockerels.*

[14 entries, 1 absent.]

- 96 I. (30s., & Champion¹), & 100 R. N. & H. C. F. R. EATON, Cleveland House, Eaton, Norwich.
 105 II. (20s.)—THE REV. T. W. STURGES, Marston Vicarage, Northwich.
 97 III. (10s.)—J. W. HERBERT, Trevidna, Silchester, Reading.

Class 353.—*Black Sumatra Game Hens or Pullets.*

[11 entries, 2 absent.]

- 109 I. (30s., & Champion²), & 100 R. N. & H. C. F. R. EATON, Cleveland House, Eaton, Norwich.
 115 II. (20s.) F. R. STEPHENS, 11 West Park Terrace, Crown Hill, Devon.
 116 III. (10s.) THE REV. T. W. STURGES, Marston Vicarage, Northwich.
 119 R. N. & H. C.—A. F. WOOTTEN, Croft House, Epsom.

Class 354.—*Langshan Cocks or Cockerels.* [7 entries, 1 absent.]

- 126 I. (30s.)—HARRY WALLIS, Northend, Warley, Brentwood.
 120 II. (20s.)—H. ALTY, Vine Cottage, Pilling, Garstang.
 125 III. (10s.)—R. O. RIDLEY, Docking Hall, King's Lynn.
 121 R. N. & H. C.—MISS R. B. BABCOCK, Rimington, Clitheroe.

Class 355.—*Langshan Hens or Pullets.* [9 entries, 1 absent.]

- 132 I. (30s.)—J. W. WALKER, Normanstead, Henley-on-Thames.
 128 II. (20s.)—J. E. GILLOTT, 21 Edward Street, East Kirkby, Notts.
 133 III. (10s.), & 135 R. N. & H. C.—HARRY WALLIS, Northend, Warley, Brentwood.

¹ Silver Medal given through the Black Sumatra Club for the best Cock or Cockerel in Class 352.

² Silver Medal given through the Black Sumatra Club for the best Hen or Pullet in Class 353.

Class 356.—Plymouth Rock Barred Cocks. [11 entries, 2 absent.]

- 137 I. (30s.)—T. J. ANDREW, Tetlaridge Farm, Launceston.
 142 II. (20s.)—R. GARLICK, Kirkby Lonsdale
 146 III. (10s.)—WILLIAM THORNTON, East View, Pilling, Garstang
 140 R. N. & H. C.—J. MARSDEN CHANDLER, Dale Bank, Cobden Road, Chesterfield.

Class 357.—Plymouth Rock Barred Hens. [5 entries, none absent.]

- 147 I. (30s.)—T. J. ANDREW, Tetlaridge Farm, Launceston.
 148 II. (20s.)—J. MARSDEN CHANDLER, Dale Bank, Cobden Road, Chesterfield.

Class 358.—Plymouth Rock Barred Cockerels. [13 entries, 2 absent.]

- 157 I. (30s.)—R. GARLICK, Kirkby Lonsdale
 153 II. (20s.)—JAMES BATEMAN, Milnthorpe
 154 III. (10s.)—MISS BURROW, Buckstone House, Carnforth.
 162 R. N. & H. C.—WILLIAM SLATER, Greenlot, Caton, Lancaster.

Class 359.—Plymouth Rock Barred Pullets. [13 entries, 3 absent.]

- 175 I. (30s.)—WILLIAM SLATER, Greenlot, Caton, Lancaster.
 172 II. (20s.)—LORD LEITH OF FYVIE, Fyvie Castle, Aberdeenshire.
 168 III. (10s.)—J. MARSDEN CHANDLER, Dale Bank, Cobden Road, Chesterfield.
 173 R. N. & H. C.—R. MAKINSON, East View, Wennington, Lancs.

Class 360.—Plymouth Rock Cocks, any other colour. [10 entries, 2 absent.]

- 176 I. (30s.)—BOLTON MODEL POULTRY FARM, Westthroughton, Bolton.
 179 II. (20s.)—J. MARSDEN CHANDLER, Dale Bank, Cobden Road, Chesterfield.
 185 III. (10s.)—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster.
 186 R. N. & H. C.—GEORGE E. GUSH, Thackham, Winchfield.

Class 361.—Plymouth Rock Hens, any other colour. [9 entries, none absent.]

- 190 I. (30s.)—J. MARSDEN CHANDLER, Dale Bank, Cobden Road, Chesterfield.
 189 II. (20s.)—JAMES BATEMAN, Milnthorpe.
 196 III. (10s.)—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster.
 188 R. N. & H. C.—THOMAS ABBOT, Wymondham

Class 362.—Plymouth Rock Cockerels, any other colour. [12 entries, 2 absent.]

- 206 I. (30s.)—WILLIAM SLATER, Greenlot, Caton, Lancaster
 202 II. (20s.)—LORD LEITH OF FYVIE, Fyvie Castle, Aberdeenshire
 200 III. (10s.)—MRS. SILVERBERG HAYWARD, The Grove, Great Bookham.
 205 R. N. & H. C.—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster.

Class 363.—Plymouth Rock Pullets, any other colour. [10 entries, none absent.]

- 215 I. (30s.)—HERBERT SPENSLEY, Oaks Farm, Menston, Leeds.
 211 II. (20s.)—O. H. HORN, Buckland House, Wellington, Somerset.
 213 III. (10s.)—SALVATION ARMY COLONY POULTRY FARM, Huddleigh, Essex.
 214 R. N. & H. C.—WILLIAM SLATER, Greenlot, Caton, Lancaster.

Class 364.—Gold or Silver Laced Wyandotte Cocks. [6 entries, 1 absent.]

- 224 I. (30s.) & 220 III. (10s.)—O. F. BATES, Harlow Farm, Harrogate
 222 II. (20s.)—TOM H. FURNESS, Carlton House, Chesterfield
 223 R. N. & H. C.—T. O. PINNIGER, The Walnuts, Westbury, Wilts.

Class 365.—Gold or Silver Laced Wyandotte Hens. [9 entries, 1 absent.]

- 225 I. (30s.)—O. F. BATES, Harlow Farm, Harrogate
 226 II. (20s.)—A. J. BROCK, 10 St. Peter's Street, Canterbury
 230 III. (10s.)—O. E. PICKLES, Kayfield House, Kirby, Colne.
 229 R. N. & H. C.—PERCY PERCIVAL, Manor House, Barrow, Burnham.

Class 366.—Gold or Silver Laced Wyandotte Cockerels. [3 entries.]

- 234 I. (30s.)—O. F. BATES, Harlow Farm, Harrogate.
 235 II. (20s.)—A. J. BROCK, 10 St. Peter's Street, Canterbury.
 236 III. (10s.)—TOM H. FURNESS, Carlton House, Chesterfield.

Class 367.—Gold or Silver Laced Wyandotte Pullets. [10 entries, 1 absent.]

- 239 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 237 II. (20s.)—O. F. BATES, Harlow Farm, Harrogate.
 244 III. (10s.)—LT.-COL. F. D. ROBINSON, Clitheroe Castle, Clitheroe.
 246 R. N. & H. C.—HERBERT SPENSLEY, Oaks Farm, Menston, Leeds.

Class 368.—White Wyandotte Cocks. [22 entries, 3 absent.]

- 254 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 248 II. (20s.)—BOLTON MODEL POULTRY FARM, Westthroughton, Bolton.
 252 III. (10s.)—THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.
 247 R. N. & H. C.—THOMAS ABBOT, Wymondham.

Class 369.—White Wyandotte Hens. [14 entries, 3 absent.]

- 272 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 270 II. (20s.)—THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.
 277 III. (10s.)—MISS L. E. MURRAY, Cronk, Ruagh, Ramsey, Isle of Man.
 279 R. N. & H. C.—H. NANCARROW, 10 Quay Street, Truro.

Class 370.—White Wyandotte Cockerels. [20 entries, 5 absent.]

- 261 I. (30s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 301 II. (20s.)—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 302 III. (10s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 297 R. N. & H. C.—J. E. D. MOYSEY, Venton, Totnes.

Class 371.—White Wyandotte Pullets. [23 entries, 3 absent.]

- 321 I. (30s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 312 II. (20s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 303 III. (10s.)—MATTHEW BELL, Mansion House, Eserick, York.
 328 R. N. & H. C.—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.

Class 372.—Black Wyandotte Cocks. [16 entries, none absent.]

- 337 I. (30s.)—BERT KIRKMAN, Ashfield, Broughton, Preston.
 325 II. (20s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 336 III. (10s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 338 R. N. & H. C.—J. CARLTON HUNTING, The Gaybird Farm, Prestwood, Great Missenden.

Class 373.—Black Wyandotte Hens. [18 entries, 2 absent.]

- 344 I. (30s.)—BOLTON MODEL POULTRY FARM, Westhoughton, Bolton.
 351 II. (20s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 342 III. (10s.)—MISS R. B. BABCOCK, Rimington, Clitheroe.
 355 R. N. & H. C.—J. F. LYON, Market Weighton.

Class 374.—Black Wyandotte Cockerels. [10 entries, 2 absent.]

- 367 I. (30s.)—MISS L. E. MURRAY, Cronk, Ruagh, Ramsey, Isle of Man.
 359 II. (20s.)—ALFRED BIRCH, Edge Farm, Sefton, near Liverpool.
 362 III. (10s.)—TOM H. FURNESS, Carlton House, Chesterfield.
 368 R. N. & H. C.—T. ORR-DICKSON, Little Olandeboya, Newtownards.

Class 375.—Black Wyandotte Pullets. [9 entries, 1 absent]

- 369 I. (30s.)—ALFRED BIRCH, Edge Farm, Sefton, near Liverpool.
 376 II. (20s.)—T. C. HEATH, Keele, Newcastle, Staffs.
 372 III. (10s.)—DR. WALTER F. COOPER, East Harling.
 371 R. N. & H. C.—MISS CHAMPION, Heather Hall, Ashby-de-la-Zouch.

Class 376.—Partridge Wyandotte Cocks or Cockerels.

[6 entries, none absent.]

- 381 I. (30s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 379 II. (20s.)—THOMAS MITCHELL, 7 Tyne Street, Parkwood Bottom, Keighley.
 383 III. (10s.)—B. YEO, 43 Prince's Road, Romford.
 378 R. N. & H. C.—HUGH GUNN, Drymeadow Farm, Innsworth, Gloucester.

Class 377.—Partridge Wyandotte Hens or Pullets. [5 entries, none absent.]

- 388 I. (30s.) & 384 II. (20s.)—HUBERT WRIGHT, Mayfield, Keighley.
 387 III. (10s.) & 384 R. N. & H. C.—HUGH GUNN, Drymeadow Farm, Innsworth.

Class 378.—Columbian Wyandotte Cocks or Cockerels. [17 entries, 2 absent.]

- 404 I. (30s.)—HUBERT WRIGHT, Mayfield, Keighley.
 405 II. (20s.) & 403 R. N. & H. C.—TOM WELCH, Chinley, Derbyshire.
 400 III. (10s.)—J. T. KITCHEN, Forest View Poultry Farm, Barrow-on-Soar.

Class 379.—Columbian Wyandotte Hens or Pullets. [12 entries, 2 absent.]

- 414 I. (30s.) & 412 III. (10s.)—ROY S. THORP, Dunsymere, Fairfield, Buxton.
 408 II. (20s.)—WILLIAM HODGES, Otlands Farm, Weybridge.
 407 R. N. & H. C.—J. THORP HINCKS, 4 Friar Lane, Leicester.

Class 380.—Blue Wyandotte Cocks or Cockerels. [5 entries, 1 absent.]

- 418 I. (30s.)—HARRY C. ARDRON, The Fosse, Syston, Leicester.
 410 II. (20s.)—BOLTON MODEL POULTRY FARM, Westhoughton, Bolton.
 420 III. (10s.)—ARTHUR J. GOUGH, Red Hill Farm, Swannington, Leicester.
 422 R. N. & H. C.—JAMES TURNER, Poultry Yards, Bentham, Yorks.

Class 381.—Blue Wyandotte Hens or Pullets. [8 entries, 2 absent.]

- 428 I. (30s.) & 430 II. (20s.)—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 423 III. (10s.)—JAMES BATTERSBY, Leghorn House, Westminster Road, Morecambe.
 425 R. N. & H. C.—MISS CHAMPION, Heather Hall, Ashby-de-la-Zouch.

Class 382.—*Wyandotte Cocks or Cockerels, any other variety.*

[6 entries, none absent.]

- 436 I. (30s.).—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 432 II. (20s.).—TOM H. FURNESS, Carlton House, Chesterfield.
 431 III. (10s.).—THOMAS CHARLTON, Thorntree Cottage, Woodside, Ryton-on-Tyne.
 435 R. N. & H. C.—J. C. TATE, The Villa, Bulmer, York.

Class 383.—*Wyandotte Hens or Pullets, any other variety.* [1 entries.]

- 438 I. (30s.).—TOM H. FURNESS, Carlton House, Chesterfield.
 440 II. (20s.).—JOHN WHARTON, Honeycott Farm, Hawes, Yorks.
 437 III. (10s.).—THOMAS CHARLTON, Thorntree Cottage, Woodside, Ryton-on-Tyne.
 439 R. N. & H. C.—MISS L. E. MURRAY, Cronk, Ruagh, Ramsey, Isle of Man.

Class 384.—*Buff Orpington Cocks.* [22 entries, 1 absent.]

- 444 I. (30s.).—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.
 458 II. (20s.).—LORD ROTHSCHILD, Tring Park, Herts.
 446 III. (10s.).—ENTWISTLE BROTHERS, Westhoughton, Bolton.
 455 R. N. & H. C.—GEORGE H. PROCTER, Flass House, Durham.

Class 385.—*Buff Orpington Hens.* [14 entries, 4 absent.]

- 463 I. (30s.).—THOMAS ABBOT, Wymondham.
 465 II. (20s.).—BOLTON MODEL POULTRY FARM, Westhoughton, Bolton.
 467 III. (10s.).—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.
 466 R. N. & H. C.—MISS S. CAREY, Toynnton Rectory, Spilshy.

Class 386.—*Buff Orpington Cockerels.* [26 entries, 1 absent.]

- 497 I. (30s.).—W. RICHARDSON, Northlands, Horsham.
 479 II. (20s.).—BOLTON MODEL POULTRY FARM, Westhoughton, Bolton.
 501 III. (10s.).—STANLEY WILLIAMS, 11 Springfield, Upper Clapton, N.E.
 482 R. N. & H. C.—J. W. P. CUSSONS, Grove House, South Kilvington, Thirsk.

Class 387.—*Buff Orpington Pullets.* [32 entries, 3 absent.]

- 511 I. (30s.). & 505 R. N. & H. C.—BOLTON MODEL POULTRY FARM, Westhoughton.
 507 II. (20s.).—THOMAS ABBOT, Wymondham.
 514 III. (10s.).—J. W. P. CUSSONS, Grove House, South Kilvington, Thirsk.

Class 388.—*White Orpington Cocks.* [13 entries, 3 absent.]

- 542 I. (30s.). & 545 II. (20s.).—MURRAY LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.
 546 III. (10s.).—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 538 R. N. & H. C.—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.

Class 389.—*White Orpington Hens.* [17 entries, 1 absent.]

- 557 I. (30s.). & 554 II. (20s.).—MISS S. CAREY, Toynnton Rectory, Spilshy.
 550 III. (10s.).—M. LINDNER, Ham Court Poultry Farm, Charlton Kings, Cheltenham.
 562 R. N. & H. C.—S. J. L. SLACK, East Hardwick, Pontefract.

Class 390.—*White Orpington Cockerels.* [30 entries, 6 absent.]

- 591 I. (30s.).—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 587 II. (20s.).—W. RICHARDSON, Northlands, Horsham.
 594 III. (10s.).—HUBERT WRIGHT, Mayfield, Keighley.
 585 R. N. & H. C.—BOLTON MODEL POULTRY FARM, Westhoughton, Bolton.

Class 391.—*White Orpington Pullets.* [33 entries, 6 absent.]

- 616 I. (30s.).—W. RICHARDSON, Northlands, Horsham.
 625 II. (20s.).—CHARLES THELLUSON, Brodsworth Poultry Farm, Doncaster.
 601 III. (10s.).—FRANK CLIFTON, Oakfield, Cheddle Hulme, Stockport.
 613 R. N. & H. C.—REV. J. B. NODDER, Ashover Rectory, Chesterfield.

Class 392.—*Black Orpington Cocks.* [26 entries, 2 absent.]

- 648 I. (30s.). & 653 R. N. & H. C.—J. C. SHANES, Stutchworth, Newmarket.
 638 II. (20s.).—ART. C. GILBERT, Swanley Poultry Farm Co., Ltd., Wilmington, Kent.
 642 III. (10s.).—TENNYSON FAWKES, Leonard Stanley, Stonehouse.

Class 393.—*Black Orpington Hens.* [8 entries, 1 absent.]

- 661 I. (30s.).—T. C. PINNIGER, The Walnuts, Westbury, Wilts.
 659 II. (20s.).—GEORGE E. GUSE, Thackham, Winchfield.
 656 III. (10s.).—ART. C. GILBERT, Swanley Poultry Farm Co., Ltd., Wilmington, Kent.

Class 394.—*Black Orpington Cockerels.* [6 entries, 1 absent.]

- 666 I. (30s.).—MR. POWELL, Orpington Poultry Farm, Orpington, Kent.
 662 II. (20s.).—G. M. BARTLET, Northlands, Horsham.
 667 III. (10s.).—T. J. STABLES, Burton, Westmorland.

Class 395.—Black Orpington Pullets. [3 entries, none absent.]

- 670 I. (30s.).—T. J. STABLES, Burton, Westmorland.
668 II. (20s.).—H. DYER, Heronsgate, Chorley Wood.

Class 396.—Spangled Orpington Cocks or Cockerels. [1 entries, none absent.]

- 672 I. (30s.). CAPT. MAX DE BATHE, Hartley Court, Reading.
674 II. (20s.).—ART. C. GILBERT, Swanley Poultry Farm Co. Ltd, Wilmington, Kent.
671 III. (10s.).—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.

Class 397.—Spangled Orpington Hens or Pullets. [6 entries, none absent.]

- 680 I. (30s.), & 676 R. N. & H. C.—CAPT. MAX DE BATHE, Hartley Court, Reading.
675 II. (20s.).—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.
679 III. (10s.).—HARRY WALLIS, Northend, Warley, Brentwood.

Class 398.—Orpington Cocks or Cockerels, any other colour.

[7 entries, none absent]

- 681 I. (30s.). WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.
682 II. (20s.), & 686 III. (10s.).—CAPT. MAX DE BATHE, Hartley Court, Reading.
683 R. N. & H. C.—ART. C. GILBERT, Swanley Poultry Farm Co., Ltd, Wilmington, Kent.

Class 399.—Orpington Hens or Pullets, any other colour

[6 entries, none absent.]

- 693 I. (30s.), & 690 II. (20s.).—ART. C. GILBERT, Swanley Poultry Farm Co., Ltd, Wilmington, Kent.
692 III. (10s.).—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.

Class 400.—Minorca Cocks or Cockerels. [7 entries, none absent.]

- 694 I. (30s.).—WILLIAM H. COOK, Model Poultry Farm, St. Paul's Cray.
695 II. (20s.).—THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.
700 III. (10s.), & 699 R. N. & H. C.—W FISHER, 86 High Street, Highgate.

Class 401.—Minorca Hens or Pullets. [9 entries, 2 absent.]

- 703 I. (30s.).—TENNISON FAWKES, Leonard Stanley, Stonehouse.
709 II. (20s.).—S. F. PARKER, 466 Bloxwich Road, Leamore, Walsall.
702 III. (10s.).—THE COUNTESS OF DERBY, Coworth Park, Sunningdale, Ascot.
707 R. N. & H. C.—EDGAR A. HOWE, Stoke-by-Nayland, Colchester.

Class 402.—White Leghorn Cocks or Cockerels. [4 entries, 1 absent.]

- 712 I. (30s.).—J. READER & SON, Leghorn House, E-crick, York
711 II. (20s.).—C. W. KILLOCK, Highfields, Audlem.
713 III. (10s.).—VICTORIA MEMORIAL POULTRY FARM, Beckernnet, Cumberland.

Class 403.—White Leghorn Hens or Pullets. [9 entries, 1 absent.]

- 714 I. (30s.).—DOBSON BROTHERS, Ribby Road, Kirkham.
720 II. (20s.).—VICTORIA MEMORIAL POULTRY FARM, Beckernnet, Cumberland.
716 III. (10s.).—MCARTHEY & MORTON, Dobieland Farm, Darvel
717 R. N. & H. C.—FRANK NEAVE, Lingwood, Norwich.

Class 404.—Brown Leghorn Cocks or Cockerels. [6 entries, 2 absent.]

- 728 I. (30s.).—A. WIDD, Leghorn House, Earlestown, Lancs.
725 II. (20s.).—W. O. STANBURY, Haddon House, Paignton.
723 III. (10s.).—ARTHUR E ARGYLE, 26 Lea Road, Southall.
727 R. N. & H. C.—H. J. TIER, The Dairy, Emsworth.

Class 405.—Brown Leghorn Hens or Pullets. [6 entries, 1 absent.]

- 729 I. (30s.).—WALTER BUTCHER, Broadholme, Belper.
732 II. (20s.).—NICHOLAS ROSSALL, Gorton's Farm, Withnell, Chorley.
731 III. (10s.).—L. O. VERREY, The Warren, Oxshott.
731 R. N. & H. C.—GEORGE A. HOLMES, Cottingley Grange, Cottingley, Bingley.

Class 406.—Black Leghorn Cocks or Cockerels. [6 entries, none absent.]

- 735 I. (30s.).—ABBOTT & ANDERSON, Alexandra Poultry Farm, Sunbury.
738 II. (20s.).—BERT KIRKMAN, Ashfield, Broughton, Preston.
739 III. (10s.).—GEORGE MELSOM, 11 Halfacre Road, Hanwell.
737 R. N. & H. C.—SMITH HARRISON, Rings Cottage, Colne.

Class 407.—Black Leghorn Hens or Pullets. [7 entries, 1 absent.]

- 742 I. (30s.), & 746 III. (10s.).—SMITH HARRISON, Rings Cottage, Colne.
741 II. (20s.).—ROBERT EDWARDS, 15 Beech Street, Bacup.
743 R. N. & H. C.—BERT KIRKMAN, Ashfield, Broughton, Preston.

Class 408.—*Leghorn Cocks or Cockerels, any other colour.*

[4 entries, 1 absent.]

- 750 I. (30s.)—A. R. FISH, Holme Mead, Hutton, Preston.
 749 II. (20s.)—J. FAIRHURST, Holmes Cottage, Temple Road, Halliwell, Bolton.
 751 III. (10s.)—MRS. VERREY, The Warren, Oxshott.

Class 409.—*Leghorn Hens or Pullets, any other colour*

[7 entries, none absent.]

- 753 I. (30s.)—BOLTON MODEL POULTRY FARM, Westoughton, Bolton.
 756 II. (20s.)—A. R. FISH, Holme Mead, Hutton, Preston.
 755 III. (10s.)—J. FAIRHURST, Holmes Cottage, Temple Road, Halliwell, Bolton.
 757 R. N. & H. C.—MRS. VERREY, The Warren, Oxshott.

Class 410.—*Silver Grey Dorking Cocks or Cockerels.* [3 entries.]

- 759 I. (30s.)—CHARLES AITKENHEAD, Stud Farm, Seaham Harbour.
 761 II. (20s.), & 760 III. (10s.)—ARTHUR C. MAJOR, Ditton, Langley, Bucks.

Class 411.—*Silver Grey Dorking Hens or Pullets.* [2 entries.]

- 763 I. (30s.), & 762 II. (20s.)—ARTHUR C. MAJOR, Ditton, Langley.

Class 412.—*Coloured Dorking Cocks or Cockerels.* [1 entries, none absent.]

- 765 I. (30s.)—THE COUNTS OF DERBY, Coworth Park, Sunningdale, Ascot.
 767 II. (20s.)—GEORGE H. PROCTER, Flax House, Durham.
 764 III. (10s.)—CHARLES AITKENHEAD, Stud Farm, Seaham Harbour.

Class 413.—*Coloured Dorking Hens or Pullets.* [6 entries, none absent.]

- 772 I. (30s.)—ARTHUR C. MAJOR, Ditton, Langley.
 770 II. (20s.)—CHARLES AITKENHEAD, Stud Farm, Seaham Harbour.
 769 III. (10s.)—THE COUNTS OF DERBY, Coworth Park, Sunningdale, Ascot.
 773 R. N. & H. C.—GEORGE H. PROCTER, Flax House, Durham.

Class 414.—*Red Sussex Cocks.* [9 entries, 1 absent.]

- 782 I. (30s.)—FRANK H. WHEELER, Bridge House, Mardon, Kent.
 776 II. (20s.)—E. T. B. COPPARD, The Glen, Mayfield, Sussex.
 775 III. (10s.)—F. W. & J. B. BUNNEY, Barcombe, Sussex.
 781 R. N. & H. C.—A. SPARK, Maynard Green, Horham Road, Sussex.

Class 415.—*Red Sussex Hens.* [10 entries, 1 absent.]

- 783 I. (30s., & Champion¹), & 787 II. (20s.)—JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield, Sussex.
 790 III. (10s.)—LORD ROTHSCHILD, Tring Park, Herts.
 786 R. N. & H. C.—G. EWSAN, Glynde, Lewes.

Class 416.—*Red Sussex Cockerels.* [6 entries, none absent.]

- 793 I. (30s.), & 797 II. (20s.)—JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield.
 796 III. (10s.), & 798 R. N. & H. C.—LORD ROTHSCHILD, Tring Park, Herts.

Class 417.—*Red Sussex Pullets.* [7 entries, 1 absent.]

- 799 I. (30s.), & 804 III. (10s.)—J. BAILY & SON, Heathfield Poultry Farm, Heathfield.
 801 II. (20s.)—E. T. B. COPPARD, The Glen, Mayfield.

Class 418.—*Light Sussex Cocks.* [6 entries, none absent.]

- 808 I. (30s.)—JAMES HEPBURN, 84 Christ Church Street, Ipswich.
 811 II. (20s.), & 809 R. N. & H. C.—COL F. WALKER, Woodmiston, Mayfield.
 806 III. (10s.)—JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield.

Class 419.—*Light Sussex Hens.* [8 entries, none absent.]

- 818 I. (30s.)—JAMES HEPBURN, 84 Christ Church Street, Ipswich.
 812 II. (20s.), & 816 R. N. & H. C.—JOHN BAILY & SON, Heathfield.
 814 III. (10s.)—C. F. FALKNER, Surrey Poultry Farm, Farnham.

Class 420.—*Light Sussex Cockerels.* [7 entries, none absent.]

- 823 I. (30s.)—WILLIAM HODGES, Otlands Farm, Weybridge.
 820 II. (20s.)—JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield.
 824 III. (10s.)—LORD ROTHSCHILD, Tring Park, Herts.
 821 R. N. & H. C.—C. F. FALKNER, Surrey Poultry Farm, Farnham.

Class 421.—*Light Sussex Pullets.* [8 entries, none absent.]

- 832 I. (30s., & Champion²)—LORD ROTHSCHILD, Tring Park, Herts.
 827 II. (20s.)—JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield.
 829 III. (10s.)—JOHN CHIVERS, Wychfield, Cambridge.
 831 R. N. & H. C.—WILLIAM HODGES, Otlands Farm, Weybridge.

¹ Silver Serviette Ring given by the Sussex Poultry Club for the best Red Sussex in Classes 414-417.

² Silver Serviette Ring given by the Sussex Poultry Club for the best Light Sussex in Classes 418-421.

Class 422. *Speckled Sussex Cocks* [8 entries, none absent.]

- 810 I. (30s.) & Champion.¹ SANDERSON BROTHERS, Lower Lodge Poultry Farm, Billinghurst.
817 II. (20s.) NORMAN ERMEN, Popes Farm, Ditchling, Sussex.
815 III. (10s.) & 830 R. N. & H. C. JOHN BAILY & SON, Heathfield

Class 423. *Speckled Sussex Hens* [8 entries, 1 absent]

- 847 I. (30s.) JOHN BAILY & SON, Heathfield Poultry Farm, Heathfield.
811 II. (20s.) S. R. CREE, Hellingly Poultry Farm, Hellingly, Sussex.
850 III. (10s.) FRANK H. WHEELER, Bridge House, Marden, Kent.
815 R. N. & H. C. NORMAN ERMEN, Popes Farm, Ditchling

Class 424. *Speckled Sussex Cockerels*. [9 entries, none absent.]

- 856 I. (30s.), & 857 III. (10s.) LORD ROTHSCHILD, Tring Park, Herts
853 II. (20s.) NORMAN ERMEN, Popes Farm, Ditchling, Sussex.
856 R. N. & H. C. SANDERSON BROTHERS, Lower Lodge Poultry Farm, Billinghurst.

Class 425. *Speckled Sussex Pullets*. [9 entries, none absent.]

- 856 I. (30s.), & 863 R. N. & H. C. JOHN BAILY & SON, Heathfield
865 II. (20s.), & 868 III. (10s.) LORD ROTHSCHILD, Tring Park, Herts.

Class 426. *Ancona Cocks or Cockerels*. [8 entries, 1 absent.]

- 876 I. (30s.) THOMAS WHITTAKER, The Lann, Accrington.
875 II. (20s.) JOSEPH EADSON, Park Villa, Ightenhill, Burnley.
871 III. (10s.) WILLIAM NELSON, Jumble Hall Bar, Baxenden, Accrington
869 R. N. & H. C. LAWRENCE BOOTH, Dingle Bank, Chester.

Class 427. *Ancona Hens or Pullets*. [10 entries, 1 absent]

- 881 I. (30s.) JOHN SAUNDERS, 24 Shady Road, Gelli Ystrad, Rhondda Valley.
883 II. (20s.) & 870 R. N. & H. C. JOSEPH EADSON, Park Villa, Ightenhill, Burnley.
884 III. (10s.) WILLIAM NELSON, Jumble Hall Bar, Baxenden, Accrington.

Class 428. *White Yokohama Cocks or Cockerels* [4 entries.]

- 889 I. (30s.) W. C. SAUNDERS, 3 Devonshire Villas, Mymouth
887 II. (20s.) MRS. L. BARNARD, Frog Hall, Wokingham.
888 III. (10s.), & 890 R. N. & H. C. MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.

Class 429. *White Yokohama Hens or Pullets*. [2 entries.]

- 891 I. (30s.), & 892 II. (20s.) MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.

Class 430. *Duchwing or Spangle Yokohama Cocks or Cockerels*. [4 entries.]

- 895 I. (30s.) F. H. TURRELL, Ide Cottage, Ide Hill, Sevenoaks.
893 II. (20s.) MRS. L. BARNARD, Frog Hall, Wokingham
894 III. (10s.), & 896 R. N. & H. C. MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.

Class 431. *Duchwing or Spangle Yokohama Hens or Pullets*. [2 entries.]

- 897 I. (30s.), & 898 II. (10s.) MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.

Class 432. *Yokohama Cocks or Cockerels, any other colour*. [3 entries]

- 900 I. (30s.) F. H. TURRELL, Ide Cottage, Ide Hill, Sevenoaks.
899 II. (20s.), & 901 III. (10s.) MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath

Class 433. *Yokohama Hens or Pullets, any other colour*. [7 entries, none absent.]

- 906 I. (30s.), 906 III. (10s.), & 903 R. N. & H. C. MRS. L. C. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.
905 II. (20s.) F. H. TURRELL, Ide Cottage, Ide Hill, Sevenoaks.

Class 434. *Brahma Cocks or Cockerels*. [9 entries, 1 absent.]

- 914 I. (30s.) JAMES LORD, Underbank, Thornton, Poulton-le-Fylde.
918 II. (20s.) J. C. LOZER, Stoke House, Devonport.
910 III. (10s.) ALLAN BLACK, JUN., 141 High Street, Irvine, N.B.
915 R. N. & H. C. S. W. THOMAS, Glasfryn, Forest Fach, Swansea.

¹ Silver Serviette Ring given by the Sussex Poultry Club for the best Speckled Sussex in Classes 422-425.

Class 435.—*Brahma Hens or Pullets.* [6 entries, 2 absent.]

- 916 I. (30s.) ALLAN BLACK, JUN., 141 High Street, Irvine, N.B.
 919 II. (20s.)—SIDNEY FLETCHER, The Hollies, Osmonston Road, Dorby.
 923 III. (10s.)—ARTHUR E. WARD, Great Warford, Mobberley, Cheshire.
 922 R. N. & H. C.—S. W. THOMAS, Glasfryn, Forest Fach, Swansea

Class 436.—*Cochin Cocks or Cockerels.* [10 entries, none absent.]

- 932 I. (30s.) & 927 III. (10s.)—GEORGE H. PROCTER, Flass House, Durham
 933 II. (20s.)—ROBERT S. WILLIAMSON, The Grange, Hednesford, Staffs.
 930 R. N. & H. C.—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster

Class 437.—*Cochin Hens or Pullets.* [8 entries, 1 absent.]

- 939 I. (30s.)—GEORGE H. PROCTER, Flass House, Durham.
 936 II. (20s.)—MR. POWELL, Orpington Poultry Farm, Orpington, Kent
 940 III. (10s.)—W. STAMMERS, St. Andrew's House, Greenstead, Colchester
 941 R. N. & H. C.—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster

Class 438.—*Maline Cocks or Cockerels.* [8 entries, none absent.]

- 948 I. (30s., & Champion), & 945 R. N. & H. C.—MRS. TERROR, Wispington House, Cookham.
 946 II. (20s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea.
 949 III. (10s.)—MRS. F. HERBERT, Ty-Gwyn, Raglan, Mon.

Class 439.—*Maline Hens or Pullets.* [7 entries, none absent.]

- 950 I. (30s., & Champion), & 956 R. N. & H. C.—MRS. F. HERBERT, Ty-Gwyn, Raglan
 955 II. (20s.), & 953 III. (10s.)—MRS. TERROR, Wispington House, Cookham.

Class 440.—*Campine Cocks or Cockerels.* [15 entries, 2 absent.]

- 957 I. (30s., & Champion,*)—DR. S. E. DUNKIN, 68 Studley Road, Clapham, S.W.
 965 II. (20s.)—W. HUNTER GANDY, Agricultural School, Mitcheldean, Glos.
 963 III. (10s.)—S. HINCHLIFFE, Muckleston, Market Drayton.
 958 R. N. & H. C.—RICHARD EDWARDS, JUN., Staunton Old Court, Staunton-on-Arrow.

Class 441.—*Campine Hens or Pullets.* [12 entries, 1 absent.]

- 977 I. (30s.)—DR. S. E. DUNKIN, 68 Studley Road, Clapham, S.W.
 973 II. (20s.)—RICHARD EDWARDS, JUN., Staunton Old Court, Staunton-on-Arrow.
 981 III. (10s.)—GEORGE REISS, 15 Market Place, Kendal.
 971 R. N. & H. C.—MRS. GOODF, Aldborough Lodge, Boroughbridge.

Class 442.—*Faverolle Cocks or Cockerels.* [16 entries, 3 absent.]

- 992 I. (30s.) T. H. JONES-PARRY, Statham Poultry Farm, Warrington.
 990 II. (20s.)—SAM W. GOULD, Foxley Hall, Lymm.
 988 III. (10s.)—TENNISON FAWKES, Leonard Stanley, Stonehouse
 967 R. N. & H. C.—T. C. BYRNE, Beech Hill, Wyldo Green, Birmingham.

Class 443.—*Faverolle Hens or Pullets.* [11 entries, 1 absent.]

- 1000 I. (30s.)—GEORGE BETTS, Goostry, Cheshire.
 1001 II. (20s.)—T. C. BYRNE, Beech Hill, Wyldo Green, Birmingham.
 1010 III. (10s.), & 1008 R. N. & H. C.—CHARLES THELLUSSON, Brodsworth Poultry Farm, Doncaster.

Class 444.—*Houdan Cocks or Cockerels.* [7 entries, 1 absent.]

- 1011 I. (30s.), & 1015 III. (10s.)—HENRY EDYE, South Binn, Heathfield.
 1016 II. (20s.)—J. W. STOKOE, Low Warden, Hexham.
 1012 R. N. & H. C.—R. GREENOP & SON, Yew Tree, Wilton, Egremont.

Class 445.—*Houdan Hens or Pullets.* [4 entries, 1 absent.]

- 1020 I. (30s.)—JOSEPH W. MOORE, Oakerland Farm, Hexham.
 1018 II. (20s.)—HENRY EDYE, South Binn, Heathfield.
 1021 III. (10s.)—S. W. THOMAS, Glasfryn, Forest Fach, Swansea.

Class 446.—*Cooks or Cockerels, any other breed.* [14 entries, 3 absent.]

- 1032 I. (30s.), & 1028 R. N. & H. C.—O. E. PICKLES, Kayfield House, Farby, Colne.
 (Silver Spangle Hamburg.)
 1029 II. (20s.)—JOHN G. W. RACKHAM, Hill House, Hethel, Norwich. (Rhode Island Red.)
 1033 III. (10s.)—JOHN SMITH, Keythorpe Hall, Leicester. (Black Spanish.)

* Silver Medal given by the Malines Poultry Club for the best Maline Cook or Hen other than Coucou in Classes 438 and 439.

* Silver Medal given by the Malines Poultry Club for the best Coucou de Maline Cook or Hen in Classes 438 and 439.

* Silver Medal given through the Campine Club for the best Campine in Classes 440 and 441.

Class 447. Hens or Pullets, any other breed. [16 entries, 1 absent.]

- 1051 I. (30s.) S. W. THOMAS, Glasfryn, Forest Fach, Swansea. (Crève)
 1048 II. (20s.)—C. E. PICKLES, Kayfield House, Farby, Colne. (Black Hamburg.)
 1041 III. (10s.)—FRED MARTIN, Rectory Lodge, Upwell. (Crève.)
 1050 R. N. & H. C.—JOHN SMITH, Keythorpe Hall, Leicester. (Black Spanish.)

Class 448.—Old English Game Bantam Cocks. [14 entries, none absent.]

- 1057 I. (30s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
 1056 II. (20s.)—WALTER FIRTH, Read, Blackburn.
 1063 III. (10s.)—MRS. T. T. ROBINSON, Blennerhasset, Carlisle.
 1067 R. N. & H. C.—MASTER R. W. PEAT, Nith View, Sillith, Cumberland.

Class 449.—Old English Game Bantam Hens. [9 entries, none absent.]

- 1070 I. (30s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
 1073 II. (20s.)—MRS. T. T. ROBINSON, Blennerhasset, Carlisle.
 1067 III. (10s.)—MISS R. B. BABCOCK, Rimmington, Clitheroe.
 1040 R. N. & H. C.—WALTER FIRTH, Read, Blackburn.

Class 450.—Modern Game Bantam Cocks, any colour.

[7 entries, none absent.]

- 1081 I. (30s.) & 1077 II. (20s.)—O. F. BATES, Harlow Farm, Harrogate.
 1075 III. (10s.)—MISS R. B. BABCOCK, Rimmington, Clitheroe.
 1080 R. N. & H. C.—HUDSON & BRIGGS, Cavendish House, Barnsley.

Class 451. Modern Game Bantam Hens, any colour.

[5 entries, none absent.]

- 1083 I. (30s.)—A. M. CRABTREE, Monkholme, Threshfield, Skipton-in-Craven.
 1082 II. (20s.)—O. F. BATES, Harlow Farm, Harrogate.
 1085 III. (10s.)—HUDSON & BRIGGS, Cavendish House, Barnsley.
 1084 R. N. & H. C.—WALTER FIRTH, Read, Blackburn.

Class 452.—Sebright Bantam Cocks [5 entries, none absent].

- 1088 I. (30s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
 1090 II. (20s.)—MISS K. D. PRESTON, Bay House, Ellil, Lancaster.
 1087 III. (10s.)—A. R. FISH, Holme Mead, Hutton, Preston.
 1091 R. N. & H. C.—REGINALD WALKER, The Limes, Ditchingham.

Class 453.—Sebright Bantam Hens. [8 entries, 2 absent].

- 1098 I. (30s.)—MISS K. D. PRESTON, Bay House, Ellil, Lancaster.
 1093 II. (20s.)—A. R. FISH, Holme Mead, Hutton, Preston.
 1094 III. (10s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
 1092 R. N. & H. C.—MISS R. B. BABCOCK, Rimmington, Clitheroe.

Class 454. Wyandotte Bantam Cocks. [7 entries, none absent.]

- 1102 I. (30s.)—W. & J. H. HEYS, West Villa, Facit, Rochdale.
 1103 II. (20s.)—HUDSON & BRIGGS, Cavendish House, Barnsley.
 1101 III. (10s.)—TOM H. FURNESS, Charlton House, Chesterfield.
 1105 R. N. & H. C.—MRS. L. J. MINNITT, St. Luke's Vicarage, Formby, Liverpool.

Class 455.—Wyandotte Bantam Hens. [5 entries, none absent.]

- 1108 I. (30s.)—TOM H. FURNESS, Charlton House, Chesterfield.
 1109 II. (20s.)—HUDSON & BRIGGS, Cavendish House, Barnsley.
 1107 III. (10s.)—E. J. BROWN, Vogue, St. Day, Scorrer.
 1110 R. N. & H. C.—J. F. LYON, Market Wighton.

Class 456.—Yokohama Bantam Cocks or Cockerels. [6 entries, none absent.]

- 1115 I. (30s.) & 1116 III. (10s.)—MRS. L. O. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.
 1114 II. (20s.)—MASTER VIVIAN POWELL, Old Place, Mayfield.
 1112 R. N. & H. C.—F. J. S. CHATTERTON, 34 Elm Park Road, Finchley.

Class 457.—Yokohama Bantam Hens or Pullets. [4 entries.]

- 1120 I. (30s.) & 1121 II. (20s.)—MRS. L. O. PRIDEAUX, Spring Cottage, Lindfield, Haywards Heath.
 1118 III. (10s.)—F. J. S. CHATTERTON, 34 Elm Park Road, Finchley.
 1119 R. N. & H. C.—F. ALEX. GILES, Mill House, Bixley, Norwich.

Class 458.—Bantam Cocks, any other variety. [13 entries, 1 absent.]

- 1124 I. (30s.) & 1126 II. (20s.)—O. F. BATES, Harlow Farm, Harrogate.
 1127 III. (10s.)—R. FLETCHER HEARNshaw, Burton Joyce, Nottingham.
 1181 R. N. & H. C.—C. THELLUSON, Brodsworth Poultry Farm, Doncaster.

- Class 459.—Bantam Hens, any other variety** [9 entries, none absent.]
 1130 I. (30s.).—CHARLES THELLUSON, Brocksforth Poultry Farm, Doncaster.
 1135 II. (20s.).—O. F. BATES, Harlow Farm, Harrogate.
 1137 III. (10s.).—W. & J. H. HEYS, West Villa, Faint, Rochdale.
 1138 R. N. & H. C.—R. FLETCHER HEARNshaw, Burton Joyce, Nottingham.

- Class 460.—Aylesbury Drakes or Ducks, bred prior to 1911.**
 [6 entries, 3 absent.]

- 1145 I. (30s.).—HENRY DAY, Northumberland Villa, Malvern Link.
 1148 II. (20s.).—J. HUNTLY & SON, Hirsal Poultry Farm, Coldstream.
 1147 III. (10s.).—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds.

- Class 461.—Aylesbury Drakes or Ducks, bred in 1911.** [1 entries.]
 1153 I. (30s.). & 1150 II. (20s.).—WILLIAM B. BYGOTT, Ryehill House, Wing, Oakham.
 1151 III. (10s.).—J. HUNTLY & SON, Hirsal Poultry Farm, Coldstream.
 1152 R. N. & H. C.—W. WOODS, Carlton Road, Workop.

- Class 462.—Rouen Drakes or Ducks, bred prior to 1911.**
 [6 entries, 1 absent.]

- 1155 I. (30s.).—WILLIAM B. BYGOTT, Ryehill House, Wing, Oakham.
 1157 II. (20s.).—WILLIAM G. KINGWELL, Dartmoor Poultry Farm, South Brent.
 1159 III. (10s.).—W. WOODS, Carlton Road, Workop.
 1156 R. N. & H. C.—J. HUNTLY & SON, Hirsal Poultry Farm, Coldstream.

- Class 463.—Rouen Drakes or Ducks, bred in 1911.** [4 entries, 1 absent.]
 1163 I. (30s.). & 1160 II. (20s.).—WILLIAM B. BYGOTT, Ryehill House, Wing, Oakham.
 1161 III. (10s.).—J. E. D. MOYSEY, Venton, Totnes.

- Class 464.—Blue Orpington Drakes or Ducks, bred prior to 1911.**
 [3 entries.]

- 1165 I. (30s.).—W. WOODS, Carlton Road, Workop.
 1166 II. (20s.). & 1164 III. (10s.).—J. E. D. MOYSEY, Venton, Totnes.

- Class 465.—Blue Orpington Drakes or Ducks, bred in 1911.** [2 entries.]
 1167 I. (30s.). & 1168 II. (20s.).—J. E. D. MOYSEY, Venton, Totnes.

- Class 466.—Drakes or Ducks, any other breed, bred prior to 1911.**
 [7 entries, 1 absent.]

- 1175 I. (30s.).—ROBERT S. WILLIAMSON, The Grange, Hednesford.
 1173 II. (20s.).—CLIFFORD D. MILNE, Woodside Cottage, Whaley Bridge.
 1171 III. (10s.).—J. HUNTLY & SON, Hirsal Poultry Farm, Coldstream.
 1172 R. N. & H. C.—W. G. KINGWELL, Dartmoor Poultry Farm, South Brent.

- Class 467.—Drakes or Ducks, any other breed, bred in 1911**
 [5 entries, none absent.]

- 1178 I. (30s.). & 1180 III. (10s.).—W. G. KINGWELL, Dartmoor Poultry Farm, South Brent.
 1176 II. (20s.).—ABBOT BROTHERS, Thuxton, Norfolk.
 1177 R. N. & H. C.—J. HUNTLY & SONS, Hirsal Poultry Farm, Coldstream.

- Class 468.—Ganders, any variety.** [9 entries, 1 absent.]
 1183 I. (30s.).—WILLIAM B. BYGOTT, Ryehill House, Wing, Oakham. (Toulouse.)
 1185 II. (20s.).—F. H. JENNINGS, Cockfield Hall, Bury St. Edmunds. (Emblen.)
 1187 III. (10s.).—W. WOODS, Carlton Road, Workop. (Toulouse.)
 1188 R. N. & H. C.—THOMAS ABBOT, Wymondham. (Toulouse.)

- Class 469.—Geese, any variety.** [8 entries, 2 absent.]
 1197 I. (30s.). & 1186 II. (20s.).—W. WOODS, Carlton Road, Workop. (Emblen and Toulouse.)
 1192 III. (10s.).—WILLIAM B. BYGOTT, Ryehill House, Wing, Oakham. (Toulouse.)
 1191 R. N. & H. C.—ABBOT BROTHERS, Thuxton, Norfolk. (Emblen.)

- Class 470.—Turkey Cocks.** [10 entries, 1 absent.]
 1205 I. (30s.). & 1207 II. (20s.).—H. E. WENDEN, Lower Farm, Lowford, Munningtree.
 1201 III. (10s.).—GAGE HARPER, Masons Bridge, Raydon, Ipswich.
 1198 R. N. & H. C.—THOMAS ABBOT, Wymondham.

- Class 471.—Turkey Hens.** [11 entries, 1 absent.]
 1208 I. (30s.).—THOMAS ABBOT, Wymondham.
 1218 II. (20s.).—MISS GLADYS M. WILLIAMS, Stanway Manor, Rushbury, Church Stretton.
 1212 III. (10s.).—WILLIAM JOHNSON, Rushbury, Church Stretton.
 1211 R. N. & H. C.—GAGE HARPER, Masons Bridge, Raydon, Ipswich.

FARM AND DAIRY PRODUCE OF THE UNITED KINGDOM.

Butter.

Class 472. *Boxes of Twelve 2-lb. Rolls or Squares of Butter, made with not more than 1 per cent. of salt. [1 entries.]*

- 1 I. (£4.)—**SOLOHEAD CO-OPERATIVE DAIRY SOCIETY, LTD.**, Lamerick Junction.
- 2 II. (£2.)—**MRS. C. M. MCINTOSH**, Havering Park, Romford.
- 1 III. (£1.)—**ALFRED RICHARD HOOLE**, Paxford, Puttingham, Wolverhampton
- 3 R. N. & H. C.—**CHARLES PRIDEAUX**, The Grange, Motcombe, Dorset

Class 473.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds from the milk of Channel Island, Devon, or South Devon Cattle and their crosses. [19 entries, 3 absent.]*

- 11 I. (£2.)—**SIR W. CAMERON GULL, BT.**, Fritsham House, Newbury.
- 22 II. (£1.)—**MRS. FRANK WARD**, Burnville, Brentor, Tavistock.
- 21 III. (10s.)—**MRS. AMELIA UNDERWOOD**, Wards Coombe, Little Gaddesden, Berkhamsted
- 7 R. N. & H. C.—**RUSSELL J. COLMAN**, Crown Point, Norwich.

Class 474.—*Two Pounds of Fresh Butter, without any salt, made up in plain pounds from the milk of Cattle of any breed or cross other than those mentioned in Class 473. [11 entries, none absent.]*

- 27 I. (£2.)—**MRS. E. A. HICKS**, Clare Hill, Pyrtton, Watlington
- 32 II. (£1.)—**CHARLES PRIDEAUX**, The Grange, Motcombe, Dorset.
- 31 III. (10s.)—**MRS. MINNIE STOKES**, Haddon House Dairy, Wylam-on-Tyne.
- 33 R. N. & H. C.—**LORD RENDLESHAM**, Rendlesham Hall, Woodbridge.

Class 475.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds from the milk of Channel Island, Devon, or South Devon Cattle and their crosses. [23 entries, 3 absent.]*

- 50 I. (£2.)—**SIGISMUND NEUMANN**, Raynham Hall, Fakenham.
- 37 II. (£1.)—**SIR GEORGE FAUDEL-PHILLIPS, BT.**, G.O.I.E. Balls Park, Hertford.
- 38 III. (10s.)—**MRS. E. FORWOOD**, Jersey Farm, Lamport Hall, Northampton.
- 47 R. N. & H. C.—**MRS. C. M. MCINTOSH**, Havering Park, Romford.

Class 476.—*Two Pounds of Fresh Butter, slightly salted, made up in plain pounds from the milk of Cattle of any breed or cross other than those mentioned in Class 475. [18 entries, 1 absent.]*

- 73 I. (£2.)—**LORD RENDLESHAM**, Rendlesham Hall, Woodbridge.
- 71 II. (£1.)—**THE NORWICH CORPORATION**, Hall Farm, Whittingham, Norwich
- 65 III. (10s.)—**MRS. G. J. HAWKINS**, Hill Farm, Harescombe, Stroud.
- 59 R. N. & H. C.—**W. A. BUSH**, The Rookery, Great Ellingham, Attleborough.

Class 477.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds in the most attractive marketable designs. [6 entries, none absent.]*

- 80 I. (£2.)—**MRS. L. B. MILDON**, Higher Mead Down, Rackenford, North Devon.
- 77 II. (£1.)—**MRS. J. GOODERHAM**, North Lopham, Thetford.
- 76 III. (10s.)—**COL. R. C. HARE**, Rymerton Hall, Attleborough.

Class 478.—*Three Pounds of Fresh Butter, slightly salted, made up in pounds and packed in non-returnable boxes for transmission by rail or parcel post. [5 entries, none absent.]*

- 85 I. (£2.)—**MRS. L. B. MILDON**, Higher Mead Down, Rackenford, North Devon.
- 82 II. (£1.)—**W. A. BUSH**, The Rookery, Great Ellingham, Attleborough.
- 84 III. (10s.)—**MRS. J. GOODERHAM**, North Lopham, Thetford.

Cheese.

Made in 1911.

Class 479.—*Three Cheddar Cheeses, of not less than 50 lb. each. [9 entries, 1 absent.]*

- 89 I. (£4.)—**ALEXANDER CROSS**, Knockdon Farm, Maybole, N.B.
- 91 II. (£3.)—**HERBERT PICKFORD**, Wealds Farm, Melksham.
- 92 III. (£2.)—**ROBERT STEVENSON**, Boghead, Gilston, Ayrshire.
- 93 IV. (£1.)—**FRANK PORTER**, Whitcombe Dairy, Corton Denham, Sherborne
- 95 R. N. & H. C.—**HARRY TRAVERS**, Middle Farm, Sutton Ditchat, Bath.

Class 480.—Three Cheddar Cheeses. [10 entries, 1 absent.]

- 97 I. (£3.)—ALEXANDER CROSS, Knockdon Farm, Maybole N.B.
 103 II. (£2.)—ROBERT STEVENSON, Boghead, Galton, Ayrshire.
 101 III. (£1.)—HERBERT PICKFORD, Westlands Farm, Melksham.
 102 R. N. & H. C.—FRANK PORTCH, Whitcombe Dairy, Corton Denham, Sherborne.

Class 481.—Three Coloured Cheshire Cheeses, of not less than 10 lb. each. [16 entries, 2 absent.]

- 116 I. (£4.)—CHARLES PRICE, Onston, Ellesmere.
 120 II. (£3.)—MRS. WALLEY, Frankton, Oswestry.
 109 III. (£2.)—PETER DUTTON, Hoofield Hall, Huxley, Chester.
 111 IV. (£1.)—W. H. HOBSON, Blakenhall, Nantwich.
 115 R. N. & H. C.—MRS. MARY NINIS, Leighton Grange, Crewe.

Class 482.—Three Uncoloured Cheshire Cheeses, of not less than 10 lb. each. [11 entries, 1 absent.]

- 130 I. (£4.)—CHARLES PRICE, Onston, Ellesmere.
 132 II. (£3.)—MRS. WALLEY, Frankton, Oswestry.
 125 III. (£2.)—PETER DUTTON, Hoofield Hall, Huxley, Chester.
 126 IV. (£1.)—C. F. HOBSON, Weston Hall, Ecclestone.
 127 R. N. & H. C.—W. H. HOBSON, Blakenhall, Nantwich.

Class 483.—Three Double Gloucester Cheeses, of not less than 22 lb. each. [7 entries, none absent.]

- 136 I. (£4.)—HERBERT PICKFORD, Westlands Farm, Melksham.
 133 II. (£3.)—CROYDON DAIRY ASSOCIATION, Croydon, Recceter, Stafford.
 139 III. (£2.)—W. H. WEEKES, Sundays Hill Farm, Fulfield, Glos.
 137 IV. (£1.)—FRANK PORTCH, Whitcombe Dairy, Corton Denham, Sherborne.
 138 R. N. & H. C.—A. STONE & SON, Hunningpot, Doulton, Shepton Mallet.

Class 484.—Three Lancashire Cheeses, not over 12 lb. each. [5 entries, none absent.]

- 141 I. (£3.)—JAMES COWPE, Fir Trees Farm, Goosnargh, Preston.
 140 II. (£2.)—JOHN BEE, Bulnape Hall, Goosnargh, Preston.
 142 III. (£1.)—THOMAS A. CROOK, Chesham House, Kirkham.
 143 R. N. & H. C.—ROBERT HAYDOCK, Round Bush Farm, Pimlough, Maldon.

Class 485.—Three Stilton Cheeses. [15 entries, none absent.]

- 151 I. (£3.)—HENRY MORRIS, Saxelbye, Melton Mowbray.
 155 II. (£2.)—JOHN SMITH, Gaddesby, Leicester.
 147 III. (£1.)—MRS. C. FAIRBROTHER, Beeby, Leicester.
 150 R. N. & H. C.—JOSEPH HALL, Stathern, Melton Mowbray.

Class 486.—Three Wensleydale Cheeses, Stilton Shape. [5 entries, none absent.]

- 163 I. (£3.)—ALFRED ROWNTREE, Kirkby Overblow, Pannal, Yorks.
 161 II. (£2.)—JOHN HORNER, Sharp Hill, Middleham, Yorks.
 162 III. (£1.)—HORTICULTURAL COLLEGE, Sindley Castle, Warwickshire.

Cider and Perry.

N.B.—The names of the Fruits from which the Cider or Perry is stated by the Exhibitor to have been made are added after the address of the Exhibitor. In Classes 487, 488, 489, and 494 the date of making is also given.

Class 487.—Casks of Dry Cider, of not less than 18, and not more than 30 gallons, made in 1910. [11 entries, 1 absent.]

- 174 I. (£4.)—TILLEY BROS, Shepton Mallet. (Ladies' Hearts, Red and White Jersey.)
 172 II. (£2.)—THOMAS STONE, Axe Vale Cider Works, Axminster. (Mixed Fruits.)
 167 III. (£1.)—HERBERT J. DAVIS, Sutton Montis, Sparkford, Somerset. (Royal and White Jersey, Davis' Favourite, and Cap of Liberty.)

Class 488.—Casks of Sweet Cider, of not less than 18, and not more than 30 gallons, made in 1910. [17 entries, 1 absent.]

- 181 I. (£4, & R. N. for Champion.)—HERBERT J. DAVIS, Sutton Montis, Sparkford. (Royal and White Jersey, Davis' Favourite, and Cap of Liberty.)
 180 II. (£2.)—HERBERT J. DAVIS. (Master's Jersey, White Jersey, Horners, and Kingston Black.)
 179 III. (£1.)—D. J. CROFTS & SON, Sutton Montis, Sparkford. (Royal and White Jersey, White Close Pippin, Corton Pippin, and Kingston Black.)

¹ Challenge Cup given by the Cider Growers of the West of England for the best exhibit in Classes 487-492.

Class 489.—*Casks of Cider, of not less than 18, and not more than 30 gallons, made previous to 1910.* [5 entries, none absent.]

104 I. (£4.) & 105 II. (£2.)—THOMAS STONE, Axe Vale Cider Works, Axminster. (Mixed Fruit, 1909.)

106 III. (£1.) TILLEY BROS., Shepton Mallet. (Horner, Doves, and Red and White Jerseys, 1909.)

Class 490.—*One Dozen Bottles of Dry Cider, made in 1910.*
[9 entries, none absent.]

201 I. (£4.)—THOMAS STONE, Axe Vale Cider Works, Axminster. (Mixed Fruit.)

205 II. (£2.)—TILLEY BROS., Shepton Mallet. (Ladies' Hearts, Chisel Jersey, and Red Jerseys.)

206 III. (£1.) TILLEY BROS. (Horners, Kingston Blacks, and French Jerseys.)

Class 491.—*One Dozen Bottles of Sweet Cider, made in 1910.*
[29 entries, none absent.]

223 I. (£4. & Champion.)—TILLEY BROS., Shepton Mallet. (Horners, Red Jersey, and Ladies' Heart.)

217 II. (£2.) HERBERT J. DAVIS, Sutton Montis, Sparkford. (Master's Jersey, White Jersey, Horner, and Kingston Black.)

229 III. (£1.)—THOMAS STONE, Axe Vale Cider Works, Axminster. (Mixed Fruit.)

227 R. N. & H. C.—JAMES SLATTER & CO, Paxford, Campden, Glos. (Kingston Black.)

Class 492.—*One Dozen Bottles of Cider, made previous to 1910.*
[10 entries, none absent.]

244 I. (£4.) HENRY WHITEWAY, Whimple, Devon. (Mixed Fruit, 1909.)

239 II. (£2.) & 240 R. N. & H. C.—THOMAS STONE, Axe Vale Cider Works, Axminster. (Mixed Fruit, 1909.)

242 III. (£1.)—TILLEY BROS., Shepton Mallet. (Doves, Horners, and Red Jerseys, 1909.)

Class 493.—*One Dozen Bottles of Dry Perry.* [7 entries, 1 absent.]
[No Award.]

Class 494.—*One Dozen Bottles of Sweet Perry* [14 entries, none absent.]

257 I. (£4.)—HENRY MASON, Withington, Hereford. (Taynton Squash, 1907.)

204 II. (£2.) TILLEY BROS., Shepton Mallet. (Burr and Oldfield, 1910.)

266 III. (£1.)—HENRY WHITEWAY, Whimple, Devon. (Mixed, 1909.)

262 R. N. & H. C.—JAMES SLATTER & CO, Paxford, Campden, Glos. (Oldfield, 1910.)

Wool.

Of 1911 Clip.

Class 495.—*Three Fleeces of Leicester or Border Leicester Wool.*
[4 entries, none absent.]

208 I. (£3.) 270 II. (£2.) & 260 III. (£1.)—GEORGE HARRISON, Gwinnford Hall, Darlington. (Leicester Yearling Hogs.)

Class 496.—*Three Fleeces of Lincoln Wool.* [5 entries, none absent.]

271 I. (£3.)—TOM CASSWELL, Pointon, Folkingham. (Yearlings.)

Class 497.—*Three Fleeces of Kent or Romney Marsh Wool.*
[17 entries, none absent.]

285 I. (£3.)—ROBERT KENWARD, Udimora, Rye. (Yearlings.)

282 II. (£2.)—L. E. & G. W. FINN, Westwood Court, Faversham. (Two Shear Wethers.)

270 III. (£1.)—CHARLES FILE, Mham, Canterbury. (Yearlings.)

280 R. N. & H. C.—ARTHUR FINN, Westbroke House, Lydd. (Two Shear Ewes.)

Class 498.—*Three Fleeces of any other Long Wool.* [11 entries, 2 absent.]

204 I. (£3.)—LORD HENRY BENTINCK, M.P., Underley Hall, Kirkby Lonsdale. (Wensleydale Young Ewes.)

203 II. (£2.)—LORD HENRY BENTINCK, M.P. (Wensleydale Yearling Ewe Hogs.)

208 III. (£1.)—THE EWEES, OF THE LATE THOMAS WILLIS, Carperby, Yorks. (Wensleydale Yearling Hogs.)

209 R. N. & H. C.—THOMAS PARLOUR, Middle Farm, Dalton-on-Tees. (Wensleydale Yearling Hogs.)

Class 499.—*Three Fleeces of Southdown Wool.* [8 entries, none absent.]

305 I. (£3.) & 304 III. (£1.)—F. H. ANSTRUTHER-GOUGH-CALTHORPE, Elvetham Hall, Winchfield. (Yearlings.)

307 II. (£2.)—W. M. CAZALET, Fairlawne, Tonbridge. (Yearling Tega.)

¹ Challenge Cup given by the Cider Growers of the West of England for the best exhibit in Classes 487-492.

Class 500.—Three Fleeces of Shropshire Wool. [5 entries, none absent.]
 314 I. (£3.)—A. N. HENDERSON, Street Ashton House, Lutterworth. (Yearling Ewes.)
 316 II. (£2.) & 315 III. (£1.)—SALE & SON, Atherstone. (Hogs.)

Class 501.—Three Fleeces of Suffolk Wool. [1 entry.]
 [No Award]

Class 502.—Three Fleeces of any other Short Wool. [10 entries, none absent.]
 327 I. (£3.)—DAVID J. THOMAS, Talachddu, Brecon. (Ryeland Yearling Ewes.)
 320 II. (£2.)—HUGH A. CHRISTY, Llangoed Castle, Llyswen, Brecon. (Ryeland Shearling Hogs.)
 318 III. (£1.)—F. H. ANSTRUTHER-GOUGH-CALTHORPE, Elvetham Hall, Winchfield. (Hampshire Down.)
 321 R. N. & H. C.—HUGH A. CHRISTY. (Ryeland Yearling Hogs.)

Class 503.—Three Fleeces of Welsh Wool. [5 entries, 1 absent.]
 331 I. (£3.)—MRS M. E. WYNNE-FINCH, Voelas, Bettws-y-coed. (Yearling Wethers.)
 332 II. (£2.)—MRS M. E. WYNNE-FINCH. (Two-Shear Wethers.)
 329 III. (£1.)—H. O. ELLIS, Tyhendre, Bangor. (Yearling Wethers.)

Class 504.—Three Fleeces of Cheviot Wool. [8 entries, 2 absent.]
 335 I. (£3.) & 336 II. (£2.)—ROBERT GRAHAM, Auchengassel, Twynholm, N.B. (Yearling Hogs.)
 339 III. (£1.) & 340 R. N. & H. C.—JACOB ROBSON, Byrness, Otterburn. (Yearling Hogs.)

Class 505.—Three Fleeces of Scotch Wool. [7 entries, none absent.]
 344 I. (£3.)—JOHN DARGUE, Burnside Hall, Kendal. (Yearling Ewes.)
 340 II. (£2.) & 345 III. (£1.)—ROBERT GRAHAM, Auchengassel, Twynholm, N.B. (Yearling Ewes and Yearling Hogs.)
 342 R. N. & H. C.—CHRISTOPHER CULLEY, West Ditchburn, Alnwick. (Yearling Ewes.)

Bread.

Bread made from Stone-ground Flour. [112 entries, 8 absent.]
 397 I. (£2.)—WILLIAM DREDGE, 49 & 51 Meadow Road, Leeds.
 360 II. (£1.)—FREDERICK O. BROCK, 20 Church Street, Kingston-on-Thames.
 437 III. (10s.)—LAURENCE WITT, 34 Heath Road, Twickenham.
 379 R. N. & H. C.—G. P. HAWKINS, 48, Sidney Street, Cambridge.

HIVES, HONEY, AND BEE APPLIANCES.¹

Class 506.—Collections of Hives and Appliances. [3 entries.]
 160 I. (£4.)—JAS. LEE & SON, 4 Martineau Road, Highbury, N.
 161 II. (£2.)—W. P. MEADOWS, Syston, Leicester.
 462 III. (£1.)—E. H. TAYLOR, Welwyn, Herts.

Class 507.—Frame Hives, for general use, unpainted. [12 entries.]
 463 I. (20s.)—ABBOTT BROS., Southall, Middlesex.
 474 II. (15s.)—H. G. TUNSTALL, Ashfield, Rainhill, Lancs.
 468 III. (10s.)—JAMES LEE & SON, 4 Martineau Road, Highbury, N.
 471 R. N. & H. C.—W. P. MEADOWS, Syston, Leicester.

Class 508.—Frame Hives, for Cottager's use, unpainted. [4 entries.]
 478 I. (20s.)—E. H. TAYLOR, Welwyn, Herts.
 476 II. (15s.)—JAMES LEE & SON, 4 Martineau Road, Highbury, N.
 475 III. (10s.)—GOODBURN BROS., Rock Road, Millfield, Peterborough.
 477 R. N. & H. C.—W. P. MEADOWS, Syston, Leicester.

Class 509.—Honey Extractors.² [2 entries.]
 180 I. (15s.)—W. P. MEADOWS, Syston, Leicester.

Class 510.—Observatory Hives, with not less than three Broad Frames, with Bees and Queens. [2 entries.]

481 I. (20s.)—GOODBURN BROS., Rock Road, Millfield, Peterborough.
 482 II. (15s.)—JAMES LEE & SON, 4 Martineau Road, Highbury, N.

Class 511.—Any appliances connected with Bee-keeping, to which no prize has been awarded at a Show of the R.A.S.E. [8 entries.]
 490 I. (10s.)—E. H. TAYLOR, Welwyn, Herts.

¹ Prizes given by the British Bee Keepers' Association.

² Prizes given by Mr. T. W. Cowan.

Class 512.—(*Comb Honey*).¹ [14 entries.]

- 502 I. (10s.)—H. W. SAUNDERS, 43 Croxton Road, Thetford.
 500 II. (7s. 6d.)—W. J. NORMAN, Harpley Mill, King's Lynn
 503 Certificate of Merit.—H. THEOBALD, Brundall, Norfolk.
 496 R. N. & H. C.—W. M. GAZE, Aldeby Grange, Beccles.

Class 513.—*Run or Extracted Light-coloured Honey*. [12 entries.]

- 511 I. (10s.)—R. W. LLOYD, 2, Norwich Road, Thetford.
 515 II. (7s. 6d.)—H. W. SAUNDERS, 43 Croxton Road, Thetford.
 513 Certificate of Merit.—W. J. NORMAN, Harpley Mills, King's Lynn.
 509 R. N. & H. C.—A. E. JACKSON, 103 Chalk Hall, Elvedon

Class 514.—*Exhibits of not less than 1 lb. of Wax, the Produce of the Exhibitor's Apiary*. [4 entries.]

- 520 I. (7s. 6d.)—H. W. SAUNDERS, 43 Croxton Road, Thetford.
 518 II. (5s.)—J. MAYER, Hemblington, Norwich.
 517 R. N. & H. C.—MISS H. LEAVER, Letheringsett, Holt.

Class 515.—*Collective Exhibits of Four Sections of Comb Honey, of any year; Four Jars of Run or Extracted Light Coloured Honey, of any year; and 1 lb. of Bees Wax*. [5 entries.]

- 521 I. (20s.)—W. F. FAKE, Great Massingham, King's Lynn.
 523 II. (10s.)—S. I. MAYER, Hemblington, Norwich.

Class 516.—*Comb Honey*.² [9 entries.]

- 530 I. (20s.)—ROBERT ROBSON, Cheviot Street, Wooler.
 534 III. (10s.)—W. J. WOOLLEY, Bridge Street, Evesham.

Class 517.—*Run or Extracted Light-coloured Honey*. [13 entries.]

- 543 I. (20s.)—R. MORGAN, The Apiary, Cowbridge.
 538 II. (15s.)—DR. S. ELLIOT, Southwell, Notts.
 542 III. (10s.)—DAVID HANCOX, Deddington, Oxon.
 544 R. N. & H. C. JAMES PEARMAN, Penny Long Lane, Derby.

Class 518.—*Run or Extracted Medium or Dark-coloured Honey*. [4 entries.]

- 551 II. (15s.)—J. PEARMAN, Penny Long Lane, Derby.
 548 III. (10s.)—A. S. DELL, Leigh, Lancashire.

Class 519.—*Granulated Honey*. [8 entries.]

- 552 I. (20s.)—J. BOYES, Queen's Head Hotel, Cardiff.
 558 II. (15s.)—A. W. WEATHERHOGG, Willoughton, Lincolnshire.
 559 III. (10s.)—J. WOODS, Nettleworth Manor, Mansfield.

Class 520.—*Comb Honey*.³ [23 entries.]

- 565 I. (20s.)—R. BROWN & SON, Flora Apiary, Somersham.
 563 II. (15s.)—R. H. BAYNES, 51 Bridge Street, Cambridge.
 579 III. (10s.)—H. THEOBALD, Brundall, Norfolk.

Class 521.—*Run or Extracted Light-coloured Honey*. [15 entries.]

- 586 I. (20s.)—R. H. BAYNES, 51 Bridge Street, Cambridge.
 587 II. (15s.)—R. BROWN & SON, Flora Apiary, Somersham.
 585 III. (10s.)—R. W. LLOYD, 22 Norwich Road, Thetford.
 594 R. N. & H. C.—L. W. MATTHEWS, Great Bollright, Chipping Norton.

Class 522.—*Run or Extracted Medium or Dark-coloured Honey*. [12 entries.]

- 600 I. (20s.)—C. E. BILLSON, Cranford, Kettering.
 601 II. (15s.)—A. D. BOULDEN, Boughton Monchelsea, Maidstone.
 604 III. (10s.)—E. E. GOODING, Nacton Road, Ipswich.
 599 R. N. & H. C.—R. H. BAYNES, 51 Bridge Street, Cambridge.

¹ Entries in Classes 512-515 can only be made by members of the North Norfolk Bee Keepers Association.

² Entries in Classes 516-517 can only be made by residents in Cheshire, Cumberland, Derbyshire, Durham, Herefordshire, Lancashire, Leicestershire, Lincolnshire, Monmouthshire, Northumberland, Nottinghamshire, Rutland, Shropshire, Staffordshire, Warwickshire, Westmorland, Worcestershire, Yorkshire, the Isle of Man, Ireland, Scotland, or Wales.

³ Entries in Classes 520-523 can only be made by residents in Bedfordshire, Berkshire, Buckinghamshire, Cambridgeshire, Cornwall, Devon, Dorset, Essex, Gloucestershire, Hampshire, Hertfordshire, Huntingdonshire, Isle of Wight, Kent, Middlesex, Norfolk, Northamptonshire, Oxfordshire, Somerset, Suffolk, Surrey, Sussex, or Wiltshire.

Class 523.—*Granulated Honey.* [9 entries.]

- 116 I. (20s.)—A. S. HOARE, Trevollard, Saltash, Cornwall.
 113 II. (15s.)—R. BROWN & SON, Flora Apiary, Somersham.
 114 III. (10s.)—GOODBURN BROTHERS, Rock Road, Millfield, Peterborough.

Class 524.—*Shallow Frames of Comb Honey, for extracting.* [6 entries.]

- 124 I. (20s.)—E. C. R. WHITE, Newton Toney, Salisbury.
 120 II. (15s.)—R. BROWN & SON, Flora Apiary, Somersham.
 121 III. (10s.)—W. M. GAZE, Aldeby Grange, Beccles.

Class 525.—*Heather Honey.* [9 entries.]

- 125 I. (20s.)—J. BERRY, Llanwrst, N. Wales.
 132 II. (15s.)—ALEXANDER WHITE, 25 Gainsnock Street, Old Cumnock.
 126 III. (10s.)—A. F. BORLAND, The Knowle, Cumnock.
 139 R. N. & H. C.—M. T. LAMBOLL, Sydenhurst, Chiddingfold, Surrey.

Class 526.—*Heather Mixture Extracted Honey.* [7 entries.]

- 133 I. (20s.)—WILLIAM DIXON, 27 Central Road, Kirkgate, Leeds.
 140 II. (15s.)—J. WOODS, Nettleworth Manor, Mansfield.
 139 III. (10s.)—J. PEARMAN, Penny Long Lane, Derby.
 134 R. N. & H. C.—W. E. BROOKING, Marlborough, Kingsbridge, Devon.

Class 527.—*Best and Most Attractive Displays of Honey.*
[7 entries.]

- 141 I. (30s.)—R. BROWN & SON, Flora Apiary, Somersham.
 145 II. (20s.)—WILLIAM DIXON, 27 Central Road, Kirkgate, Leeds.
 147 III. (10s.)—J. PEARMAN, Penny Long Lane, Derby.
 143 R. N. & H. C.—A. S. DELL, Leigh, Lancashire.

Class 528.—*Exhibits of not less than 2 lb. of Wax, the Produce of the Exhibitor's Apiary.* [9 entries.]

- 148 I. (10s.)—R. H. BAYNES, 51 Bridge Street, Cambridge.
 156 II. (7s. 6d.)—E. C. R. WHITE, Newton Toney, Salisbury.
 151 III. (5s.)—J. PEARMAN, Penny Long Lane, Derby.
 153 R. N. & H. C.—J. ROWLANDS, Maes Apiaries, Pwllheli, North Wales.

Class 529.—*Exhibits of not less than 3 lb. of Wax, the Produce of the Exhibitor's Apiary.* [5 entries.]

- 157 I. (10s.)—J. BERRY, Llanwrst, North Wales.
 160 II. (7s. 6d.)—J. PEARMAN, Penny Long Lane, Derby.
 159 III. (5s.)—GOODBURN BROTHERS, Rock Road, Millfield, Peterborough.
 161 R. N. & H. C.—E. C. R. WHITE, Newton Toney, Salisbury.

Class 530.—*Honey Vinegar.* [3 entries.]

- 162 I. (7s. 6d.)—R. BROWN & SON, Flora Apiary, Somersham.
 163 II. (5s.)—G. W. KIRBY, 17 Priory Road, Knowle, Bristol.
 164 Certificate of Merit.—J. PEARMAN, Penny Long Lane, Derby.

Class 531.—*Mead.* [4 entries.]

- 167 I. (7s. 6d.)—R. L. & H. C. JONES, Monks Acre Apiary, Andover.
 166 II. (5s.)—R. BROWN & SON, Flora Apiary, Somersham.
 166 Certificate of Merit.—R. ALLEN, Tismore, Bicester.

Class 532.—*Exhibits of a practical or interesting nature connected with Bee-culture, not mentioned in the foregoing Classes.* [2 entries.]

- 169 I. (10s.)—A. S. DELL, Leigh, Lancashire.
 170 Certificate of Merit.—WILLIAM DIXON, 27 Central Road, Kirkgate, Leeds.

Class 533.—*Exhibits of a scientific nature, not mentioned in the foregoing Classes, to which no prize has been awarded at a Show of the R.A.S.E.*
[No entry.]

BUTTER-MAKING COMPETITIONS.

Monday, June 26th. [26 competitors.]

- 25 I. (£5.)—MISS EMMA E. M. HERN, Prospect Farm, The Heywood, Diss.
 11 II. (£3.)—MISS MILDRED HILLS, Poplars Farm, Leavenheath, Colchester.
 16 III. (£2.)—MISS E. M. SPARROW, Claypits Farm, Bishop's Stortford.
 10 IV. (£1.)—MISS OLIVE E. BROOKE, Sturgeon's Farm, Roydon, Diss.
 3 V. (10s.)—MISS MAY BUSH, The Rookery, Great Ellingham, Attleborough.
 15 R. N. & H. C.—MISS MAY SEXTON, Holly Farm, Heywood, Diss.

Tuesday, June 27th [25 competitors.]

- 31 I. (£5.)—MISS MARGARET LINDSAY NISBET, Lordship, Hinxton, Great Chesterford
 41 II. (£3.)—MRS JAMES O. SNELL, Brundish Hall, Framlingham.
 30 III. (£2.)—MISS HARRIET NICHOLS, Highgate Farm, Runham, Great Yarmouth.
 35 IV. (£1.)—MISS MAY E. PYMAR, The Lodge, Kenninghall, Thetford
 44 V. (10s.)—MISS DOROTHY E. KING, Bolwich Farm, Marham, Norwich
 37 E. N. & H. C.—MISS DOROTHY JARVIS, Hindringham, Walsingham

Wednesday, June 28th. [25 competitors.]

- 65 I. (£5.)—MISS GERTIE M. GARRARD, Porter's Farm, Kelvedon, Essex.
 57 II. (£3.)—MISS EDITH BUSH, The Rookery, Great Ellingham, Attleborough.
 59 III. (£2.)—MRS. J. A. CLARKE, The Lodge Farm, Peisenhall
 70 IV. (£1.)—MISS ANNIE LINDSAY NISBET, Lordship, Hinxton, Great Chesterford
 54 V. (10s.)—MISS EVELYN M. GRANT, Hathes Farm, Langley, Norwich

Champion Class.—Friday, June 30th.

- 25 I. (£5.)—MISS EMMA E. M. HERN, Prospect Farm, The Heywood, Diss
 10 II. (£3.)—MISS OLIVE E. BROOKE, Sturgeon's Farm, Roudon Diss
 65 III. (£2.)—MISS GERTIE M. GARRARD, Porter's Farm, Kelvedon, Essex.
 41 (Equal Fourth) MRS. JAMES O. SNELL, Brundish Hall, Framlingham
 57 (Prize of 10s.) MISS EDITH BUSH, The Rookery Great Ellingham, Attleborough.

HORSE-SHOEING COMPETITIONS.

Class 1.—Hunters. [23 competitors.]

- 3 I. (£5, & G. M.¹)—THOMAS WILLIAM CLAYTON, A.F.C.L. R.S.S., 81 Victoria Avenue, East End Park, Leeds
 18 II. (£3 10s., & S. M.²)—HERBERT MORGAN, A.F.C.L. R.S.S., Cwmpwr, Llanarthney, Carmarthen.
 7 III. (£2 10s., & B. M.²)—JOSEPH DEIGHTON, A.F.C.L. R.S.S., 81 East Parade, Harrogate.
 16 IV. (£2.)—ALFRED KIMBER, A.F.C.L. R.S.S., Ro-eleigh, Stone Street, Tunbridge Wells
 9 V. (£1 10s.)—CHARLES S. DOUBLE, A.F.C.L. R.S.S., Holmleigh, Spencers Wood, Reading.
 20 VI. (£1.)—THOMAS NORTHWOOD, A.F.C.L. R.S.S., High Street Shoeing Forge, Cleobury Mortimer.
 13 E. N. & H. C.—HARRY JONES, R.S.S., The Forge, Hendra, near Monmouth

Class 2.—Roadsters. [37 competitors.]

- 40 I. (£5, & G. M.¹)—ALFRED KIMBER, A.F.C.L. R.S.S., Ro-eleigh, Stone Street Tunbridge Wells.
 52 II. (£3 10s., & S. M.²)—HERBERT MORGAN, A.F.C.L. R.S.S., Cwmpwr, Llanarthnev, Carmarthen.
 40 III. (£2 10s., & B. M.²)—EDWARD ERNEST DRING, A.F.C.L. R.S.S., Wheat Sheaf Shoeing Forge, Long Bennington, Grantham
 45 IV. (£2.)—HARRY JONES, R.S.S., The Forge, Hendra, near Monmouth.
 43 V. (£1 10s.)—CECIL GILBERT, A.F.C.L. R.S.S., 2A York Road, Leeds.
 54 VI. (£1.)—THOMAS NORTHWOOD, A.F.C.L. R.S.S., High Street Shoeing Forge, Cleobury Mortimer.
 46 E. N. & H. C.—ROBERT JONES, R.S.S., The Forge, St. Arvans, Chepstow.

Class 3.—Cart Horses. [37 competitors.]

- 86 I. (£5, & G. M.¹)—THOMAS BENJAMIN LEWIS, R.S.S., Cambram Forge, Aberystwyth,
 94 II. (£3 10s., & S. M.²)—JOHN REES, R.S.S., Shoeing Forge, Cwmcaru, Newport, Mon.
 63 III. (£2 10s., & B. M.²)—ERNEST EDWARD BRADMONT, 6 Trafalgar Road, Old Kent Road, London, S.E.
 70 IV. (£2.)—ALBERT DENNISON, R.S.S., Mill Lane, Brighouse.
 92 V. (£1 10s.)—THOMAS NORTHWOOD, A.F.C.L. R.S.S., High Street Shoeing Forge, Cleobury Mortimer.
 97 VI. (£1.)—JOHN TOMLINSON, R.S.S., High Street Shoeing Forge, Morley, near Leeds
 76 E. N. & H. C.—EVAN EVANS, R.S.S., Rhyd-y-polon, Gorsemonn, Glam.

¹ Gold Medal given by the Worshipful Company of Farriers to the First Prize Winner in each Class.

² Silver and Bronze Medals given by the National Master Farriers' Association, in each Class, for Members of that Association only.

PLANS OF HOUSE AND BUILDINGS FOR SMALL HOLDINGS.

[69 entries]

- I. (£25.) LESLIE T. MOORE, A.R.I.B.A., 3 Raymond Buildings, Gray's Inn, London, W.C.
II. (£15.)—HUNTER & WOODHOUSE, Belper, Derbyshire.
III. (£10.)—JOHN P. BLAKE, 60 Richmond Park Road, Kingston-on-Thames.
IV. (£5.)—THOMAS PAUL BACSOR, 18 Howard Street, Wakefield.

FARM PRIZE COMPETITIONS.¹

(Open to *bonâ fide* Tenant Farmers.)

For the best managed Farms in Norfolk and Suffolk.

Class 1—*Farms, chiefly Arable, of 500 acres or over, exclusive of Heath and Saltings.* [13 entries.]

- 13 I. (£100.)—S. R. SHERWOOD, Playford, Ipswich.
4 II. (£50.)—F. JOHN KNIGHT, East Walton, King's Lynn.
9 III. (£20.)—JOHN PEROWNE, Gatton Hall, Alderford, Norwich.
8 R. N. & H. C.—JOHN W. PEACOCK, Hockwold, Brandon, Norfolk.

Class 2—*Farms, chiefly Arable, of not less than 250 and under 500 acres, exclusive of Heath and Saltings.* [17 entries.]

- 26 I. (£75.)—GEORGE WM. RACKHAM, Hill Farm, Hethel, Norwich.
21 II. (£30.)—ANTHONY KNIGHT, West Newton, King's Lynn.
30 III. (£15.)—FRED SMITH, Cawston, Norwich.
31 R. N. & H. C.—JOHN ROBERT TYRRELL, West House Farm, Leiston, Suffolk

Class 3—*Farms, chiefly Arable, of not less than 100 acres and under 250 acres, exclusive of Heath and Saltings.* [15 entries.]

- 47 I. (£50.)—G. W. TURNER, Dial Farm, Earl Soham, Framlingham.
36 II. (£25.)—ARCHIBALD J. CHRISTIE, Slys Farm, North Oreake, Fakenham.
33 III. (£10.)—EXORS. OF JOHN COSSEY, The Cottage, Raveningham, Loddon.
41 R. N. & H. C.—BENJAMIN MONSEY, Sustead, Norwich.

Class 4—*Farms, chiefly Arable, of not less than 50 acres and under 100 acres, exclusive of Heath and Saltings.* [11 entries.]

- 54 I. (£40.)—JAMES GREENGRASS, Malt House Farm, Stoke Holy Cross, Norwich.
49 II. (£20.)—FREDERICK ARTHURTON, East Tuddenham, East Dereham.
62 III. (£10.)—EDMUND CHANEY, Starston Wood Farm, Harleston, Norfolk.
53 R. N. & H. C.—F. J. GEATER, Yankee Lodge, Middleton, Yoxford, Suffolk.

Class 5—*Farms, chiefly Arable, of not less than 10 acres and under 50 acres, exclusive of Heath and Saltings.* [9 entries.]

- 66 I. (£20.)—STEPHEN WARREN, Walton Highway, Wisbech.
64 II. (£10.)—FREDERICK H. MEANS, Outwell, Norfolk.
62 III. (£5.)—THOMAS HOWARD, Benhall Green, Saxmundham.

FORESTRY SECTION.

Class 1—*Specimens of Oak, Elm, Ash, and Beech Timber, grown in Great Britain or Ireland.*

- 2 I. (Silver Medal.)—THE EARL OF LEICESTER, G.C.V.O., C.M.G., Holkham, Norfolk.
1 II. (Bronze Medal.)—THE EARL OF CARNARVON, Highclere Castle, Newbury.

Class 2—*Specimens of Larch, Spruce, and Scotch Pine Timber.*

- 5 I. (Silver Medal.)—THE EARL OF CARNARVON, Highclere Castle, Newbury.
6 II. (Bronze Medal.)—THE EARL OF LEICESTER, G.C.V.O., C.M.G., Holkham, Norfolk.

Class 3—*Specimens of any other sort of Hard Wood or Broad-leaved Timber.*

- 10 I. (Silver Medal.)—C. COLTMAN ROGERS, Stanage Park, Rudnorshire.
9 II. (Bronze Medal.)—THE EARL OF LEICESTER, G.C.V.O., C.M.G., Holkham, Norfolk.

¹ Prizes given by the Norwich Local Committee.

Class 4.—*Specimens of any other sort of Coniferous Timber.*

- 13 I. (Silver Medal).—THE EARL OF LEICESTER, G.O.V.O., C.M.G., Holkham, Norfolk.
12 II. (Bronze Medal).—THE EARL OF CARNARVON, Highclere Castle, Newbury.

Class 5.—*Oak Field Gates for Farm use.*

- 15 I. (Silver Medal).—THE EARL OF LEICESTER, G.O.V.O., C.M.G., Holkham, Norfolk.
16 II. (Bronze Medal).—LORD BARNARD, Baby Castle, Darlington.

Class 6.—*Field Gates for Farm use, of any other home-grown wood or combination of woods.*

- 19 I. (Silver Medal).—THE EARL OF CARNARVON, Highclere Castle, Newbury
21 II. (Bronze Medal).—LORD BARNARD, Baby Castle, Darlington.

Class 7.—*Any other Gates for Farm or Estate use.*

- 23 (Silver Medal).—THE EARL OF LEICESTER, G.O.V.O., C.M.G., Holkham, Norfolk.
24 (Silver Medal).—LORD BARNARD, Baby Castle, Darlington.

Class 8.—*Tree Guards.*

- 29 I. (Silver Medal).—C. COLTMAN ROGERS, Stanage Park, Radnorshire.
27 II. (Bronze Medal).—R. & R. NEAVEYSON, Fenkirk, Peterborough.

Class 9.—*Fencing.*

- 30-39 I. (Silver Medal).—ARMSTRONG, ADDISON & CO., Sunderland.
40-47 (Bronze Medal).—ENGLISH BROS. LTD., Wisbech, Cambs.
50-53 (Bronze Medal).—STANLEY UNDERWOOD CO., Lynchmere, Haslemere, Surrey.

Class 10.—*Specimens showing comparative quality of any Timber grown on different soils and situations, and the respective ages at which it reaches marketable size and maturity.*

- 54 (Bronze Medal).—MORGAN PHILIPS PRICE, Tibberton Court, Gloucester.

Class 11.—*Specimens of Stems, and Boards cut from them, illustrating the effects of dense and thin crops in branch suppression and quality of timber.*

[No entry.]

Classes 12 to 18.—*Articles not for competition.*

- 89-93, 101-103 (Gold Medal).—SCHOOL OF FORESTRY, Cambridge.
61-72, & 87 (Silver Medal).—E. R. PRATT, Ryston Hall, Downham, and T. H. PROSSER & SONS, 516 Holloway Road, London, N.
91 (Bronze Medal).—COOPER LABORATORY FOR ECONOMIC RESEARCH, Watford.

PLANTATIONS COMPETITION.

Restricted to Norfolk, Suffolk, and Cambridgeshire.

Class 1.—*Plantations, mainly of Hardwoods, five to thirty years old, not less than 6 acres in extent, restricted to landowners with more than 300 acres of woodland.* [2 entries.]

- 2 I. (Silver Medal & £3).—LIEUT.-COL. B. T. PETRE, Westwick, Norwich.
1 II. (Bronze Medal & £2).—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds.

Class 2.—*Plantations, mainly of Hardwoods, five to thirty years old, not less than 3 acres in extent, restricted to landowners with less than 300 acres of woodland.* [4 entries.]

- 4 I. (Silver Medal & £3).—SIR HUGH R. BEEVOR, Bt., Hargham, Attleborough.
6 II. (Bronze Medal & £2).—W. A. MACFARLANE-GRIEVE, Impington Park, Cambridgeshire.

Class 3.—*Plantations, mainly of Conifers, five to thirty years old, not less than 6 acres in extent, restricted to landowners with more than 300 acres of woodland.* [8 entries.]

- 11 I. (Silver Medal, £3, & G.M.¹).—LIEUT.-COL. B. T. PETRE, Westwick, Norwich.
14 II. (Bronze Medal & £2).—E. G. PRETTYMAN, M.P., Orwell Park, Ipswich.
13 Bronze Medal.—LIEUT.-COL. B. T. PETRE.

Class 4.—*Plantations, mainly of Conifers, five to thirty years old, not less than 3 acres in extent, restricted to landowners with less than 300 acres of woodland.* [3 entries.]

- 16 I. (Silver Medal & £3).—MAJOR G. F. MOLINEUX-MONTGOMERIE, Garboldisham Old Hall, Norfolk.

¹ Gold Medal given by the Royal English Arboricultural Society for the best Plantation in Classes 1-6.

Class 5.—*Best Examples of the Conversion of an unprofitable Wood, over 10 acres in extent, into a thrifty condition, of which a clear history must be given* [5 entries.]

19 I. (Silver Medal & £3.) DOWAGER (COUNTESS OF LEICESTER, Weymouth, Sw. Iffham.

18 II. (Bronze Medal & £2.)—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds.

Class 6.—*Best Managed Woodland Estates, not less than 1,000 acres in area.* [7 entries.]

28 I. (Silver Medal & £3.)—LIEUT.-COL. B. F. PETRE, Westwick, Norwich.

23 II. (Bronze Medal & £2.)—THE EARL OF LEICESTER, G.C.V.O., C.M.G., Holkham, Norfolk.

29 Bronze Medal.—E G PRETYMAN, M.P., Orwell Park, Ipswich.

HOME NURSERIES COMPETITION.

Restricted to Norfolk, Suffolk, and Cambridgeshire.

Class 1.—*Best Seed Beds of at least three species of Conifers, sown in the spring of 1911.* [3 entries.]

1 I. (Silver Medal.)—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds.

3 II. (Bronze Medal.)—RUSSELL J. COLMAN, Crown Point, Norwich.

Class 2.—*Best Nursery Plots of Transplanted Trees.* [4 entries.]

5 I. (Silver Medal.)—THE EARL OF LEICESTER, G.C.V.O., C.M.G., Holkham, Norfolk.

6 II. (Bronze Medal.)—SIR REGINALD P. BEAUCHAMP, BT., Langley Park, Norfolk.

4 H. C.—EARL CADOGAN, K.G.

Class 3.—*Best Managed General Home Nurseries, not exceeding half an acre in extent.* [2 entries.]

9 I. (Silver Medal.)—MAJOR G. F. MOLINEUX-MONTGOMERIE, Garboldisham Old Hall, Norfolk.

Class 4.—*Best Managed General Home Nurseries, exceeding half an acre in extent.* [10 entries.]

11 I. (Silver Medal.)—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds.

12 (Equal Second.)—THE EARL OF LEICESTER, G.C.V.O., C.M.G., Holkham, Norfolk.

17 (Bronze Medal.)—SIR EUSTACE GURNEY, Sprowston Hall, Norwich.

15 H. C.—KENNETH M. CLARE.

Class 5.—*Best Plots of Seedlings, both Hardwood and Conifer.* [2 entries.]

20 I. (Silver Medal.)—EARL CADOGAN, K.G., Culford Hall, Bury St. Edmunds.

21 II. (Bronze Medal.)—SIR REGINALD P. BEAUCHAMP, BT., Langley Park, Norfolk.

HORTICULTURAL EXHIBITION.

Class 1.—*Groups of Miscellaneous Plants, in and out of bloom.* [2 entries.]

1 I. (£30.)—JAMES CYPHER & SONS, Exotic Nurseries, Cheltenham.

2 II. (£25.)—W. A. HOLMES, West End Nurseries, Chesterfield.

Class 2.—*Collections of Orchids.* [1 entry.]

3 I. (Gold Medal & £10.)—JAMES CYPHER & SONS, Exotic Nurseries, Cheltenham.

Class 3.—*Groups of Carnations.*

[No entry.]

Class 4.—*Groups of Tuberous Begonias in pots.* [2 entries.]

5 I. (Gold Medal & £5.)—BLACKMORE & LANGDON, Twerton Hill Nursery, Bath.

4 II. (£3.)—THOMAS S. WARE, Feltham, Middlesex.

Class 5.—*Displays of Herbaceous Flowers, Bamboos, Liliacs, and Foliage.* [4 entries.]

6 I. (£20.)—WM. ARTINGDALE & SON, Nether Green Nursery, Sheffield.

8 II. (£15.)—W. & J. BROWN, 29 Narrow Street, Peterborough.

7 III. (£10.)—WHITELEGGE & PAGE, Chislehurst, Kent.

Class 6.—*Collections of Store and Greenhouse Plants in bloom.* [1 entry.]

10 I. (Gold Medal & £10.)—JAMES CYPHER & SONS, Queens Road Nurseries, Cheltenham.

Class 7.—*Collections of Cut Sprays of Carnations.* [4 entries.]

12 I. (Gold Medal & £5.)—C. S. WATERS, Deanland Nursery, Balcombe, Sussex.

13 II. (£3.)—COL. THE HON. C. HARBORD, Gunton Park, Norwich.

14 III. (£2.)—LORD DE RAMSEY, Haverland Hall, Norwich.

- Class 8.—*Collections of Cut Hardy Perennials, Roses excluded.* [6 entries.]
 18 I. (£10).—LIEUT. COL. B. T. PETRE, Westwick House, Norwich.
 20 II. (£5).—G. GIBSON & CO., Leeming Bar, Bedale, Yorks.
 19 III. (£3).—HARKNESS & SONS, The Grange Nurseries, Bedale, Yorks.

- Class 9.—*Collections of Cut Roses.* [4 entries.]
 22 I. (Gold Medal & £5).—F. M. BRADLEY, Church Street, Peterborough.
 24 II. (£3).—W. & J. BROWN, 29 Narrow Street, Peterborough.
 21 III. (£2).—G. MOUNT & SONS, The Nurseries, Canterbury.

- Class 10.—*Collections of Sweet Peas.* [9 entries.]
 25 I. (£5).—R. HOLMES, Tuckswood Farm, Norwich.
 26 II. (£3).—E. W. KING & CO., Coggeshall, Essex.
 28 III. (£2).—S. BIDE & SONS, LTD., Alma Nursery, Farnham, Surrey.

- Class 11.—*Collections of Eight Kinds of Vegetables.* [3 entries.]
 35 I. (£5).—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Nottinghamshire.
 36 II. (£3).—HON. W. LOWTHER, Campsea Ash, Wickham Market.
 34 III. (£2).—COL. ROUS, Worstead House, Norfolk.

- Class 12.—*Decorative Displays of Ripe Fruit.* [1 entry.]
 37 I. (£20).—THE DUKE OF PORTLAND, K.G., Welbeck Abbey, Nottinghamshire.

Local Section.

- Class 13.—*Thirty-six Blooms, Roses, distinct varieties.* [3 entries.]
 I. (Silver Medal & 40s.).—R. STEWARD, Saxlingham.
 II. (30s.).—MISS PENRICE, Witton.

- Class 14.—*Eight distinct varieties of Roses.* [8 entries.]
 I. (20s.).—LIEUT.-COL. MAC EWEN, Thorpe St. Andrew.
 II. (10s.).—R. STEWARD, Saxlingham.
 III. (7s. 6d.).—BISHOP FISHER, Flegg Burgh.

- Class 15.—*Twelve Blooms, Roses, distinct varieties, Tea or Nisette.* [5 entries.]
 I. (20s.).—R. STEWARD, Saxlingham.

- Class 16.—*Twelve Blooms of any one variety of Tea or Nisette Roses.* [3 entries.]
 I. (20s.).—R. STEWARD, Saxlingham.

- Class 17.—*Twelve Blooms of any one variety of Rose, other than Tea or Nisette.* [7 entries.]
 I. (20s.).—R. STEWARD, Saxlingham.
 II. (10s.).—MISS PENRICE, Witton.
 III. (7s. 6d.).—BISHOP FISHER, Flegg Burgh.

- Class 18.—*Twenty-four Blooms, Roses, distinct varieties.* [5 entries.]
 I. (30s.).—R. STEWARD, Saxlingham.
 II. (20s.).—MISS PENRICE, Witton.

- Class 19.—*Twelve Bunches, distinct varieties of Garden Roses.* [2 entries.]
 I. (20s.).—MRS. STEDMAN, East Dereham.
 II. (15s.).—H. NEWHOUSE, Norwich.

- Class 20.—*Collections of Cut Carnations.* [3 entries.]
 I. (Silver Medal & 20s.).—COL. THE HON. C. HARBORD, Gunton.
 II. (15s.).—COL. B. T. PETRE, Westwick.

- Class 21.—*Twelve Bunches of Sweet Peas.* [17 entries.]
 I. (Silver Medal & 20s.).—LORD STAFFORD, Costessey.
 II. (15s.).—F. A. BAINBRIDGE, Hethersett.
 III. (10s.).—THE REV. J. A. L. FELLOWES, Bunwell.
 R. N. & H. C.—LIEUT.-COL. MAC EWEN, Thorpe St. Andrew.

- Class 22.—*Twenty-four Bunches of Cut Flowers, Hardy Perennials.* [1 entry.]
 I. (Silver Medal & 30s.).—THE REV. J. A. L. FELLOWES, Bunwell.

- Class 23.—*Twelve Bunches of Cut Flowers, Hardy Perennials.* [5 entries.]
 I. (20s.).—COL. ROUS, Worstead.
 II. (15s.).—F. NRAVE, Lingwood.
 III. (10s.).—MRS. STEDMAN, East Dereham.

- Class 24.—*Six Dishes of Fruit.* [2 entries.]
 I. (Silver Medal & 20s.).—COL. THE HON. C. HARBORD, Gunton.
 II. (15s.).—COL. ROUS, Worstead.

- Class 25.—*Collections of twelve kinds of Vegetables.* [1 entry.]
 I. (Silver Medal & 20s.).—COL. ROUS, Worstead.

Horticultural Exhibits not for Competition.

Large Gold Medals to:—

- 46 SIR JEREMIAH COLMAN, BT, Gatton Park, Surrey.
78 SUTTON & SONS, Reading.
83 R. WALLACE & CO., Colchester.

Gold Metals to:—

- 47 BENJAMIN R. CANT, Old Rose Gardens, Colchester
49 DOBBIE & CO., Edinburgh.
51 DANIELS BROS., LTD., Royal Arcade, Norwich.
58 FISHER, SON & SIBBAY, LTD., Royal Nurseries, Handsworth, Sheffield
60 HOBBS, LTD., Norfolk Nurseries, Dereham.
82 JAMES VEITCH & SONS, Royal Exotic Nurseries, Chelsea, London, S.W.

Silver Gilt Medals to:—

- 38 A. J. & C. ALLEN, Bowthorpe Road Nurseries, Earlham, Norwich.
40 ROBERT BOLTON, Warton, Carnforth.
42 R. H. BATH, LTD., Floral Farms, Wisbech
43 BLACKMORE & LANGDON, Twerton Hill Nursery, Bath.
64 KING'S ACRE NURSERIES, LTD., Hereford.
68 STUART LOW & CO., Royal Nurseries, Bush Hill Park, Enfield.
71 H. B. MAY & SONS, Upper Edmonton

Silver Medals to:—

- 34 THE EARL OF ALBEMARLE, K.C.V.O., C.B., Quadenham.
39 BAKERS, Old Hall Nurseries, Codsall, Staffs.
41 CHARLES W. BREADMORE, 120 High Street, Winchester.
45 WILLIAM CUTBUSH & SONS, Highgate.
52 ALEX. DICKSON & SONS, Royal Nurseries, Newtownards.
53 O. ENGLEMAN, Saffron Walden.
54 H. N. ELLISON, 5 Bull Street, West Bromwich.
56 WILLIAM FELS & SON, 16 Market Place, Hitchin.
66 JOHN K. KING & SONS, Coggeshall, Essex.
70 LAXTON BROS., Bedford.
72 GEORGE MASSEY & SONS, Spalding.
73 R. C. NOTCUTT, The Nurseries, Woodbridge.
75 PIPER & SON, 80 Bishop's Road, Bayswater, London, W
79 R. SYDENHAM, LTD., Tenby Street, Birmingham.
80 G. STARK & SON, Great Ryburgh, Norfolk.
81 TOOGOOD & SONS, Southampton.
85 YOUNG & CO., Hatherley, Cheltenham
88 WILLIAM ABTINGDALE & SON, Sheffield.
87 J. BURRELL & CO., Cambridge.
88 FRANK CANT & CO., Colchester.
89 HENRY MORSE, Eaton, Norwich.

IMPLEMENTS.

Trials of Potato Diggers and Sorters.

Class 1.—*Potato Diggers.* [14 entries, 1 absent.]

- 6 I. (£20).—MARTIN'S CULTIVATOR CO., LTD., Lincolnshire Iron Works, Stamford.
1 II. (£10).—BLACKSTONE & CO., LTD., Stamford.

Class 2.—*Potato Sorters.* [6 entries, none absent.]

- 15 I. (£10).—COOCH & SON, Commercial Street, Northampton.
19 II. (£5).—WALTER NESS, King's Kettle, Fife, N.B.

Miscellaneous Implements.

Silver Medal for articles entered as "New Implements for Agricultural or Estate Purposes."

- 590 BAMFORD & SONS, Leighton Iron Works, Uttoxeter, for Meal Sifter, the "Colonial."
1050 J. & H. MCLAREN, Midland Engine Works, Leeds, for Self-Lifting and Steering Attachment on Steam Plough.
1098 R. A. LISTER & CO., LTD., Dursley, Glos., for Electric Lighting Installation, Patent Automatic "Bruston."
1612 AKTERBOLOSET G. WELANDER & KELLNERS VERKSTÄDER, Norrköping, Sweden, for Milking Machine, "Manus."
4119 F. M. DOSSOR, St. Catherine's Work, Doncaster, for Machine for Dressing Mangold Seed.
6442 ALBERT IRVING MUNTZ, Stype Grange, Hungerford, for Wire Strainer.

PRIZE LIST

For DONCASTER SHOW, JULY 2 to 6, 1912

Total value of Prizes offered (inclusive of Champion Prizes, Special Prizes, Cups, Medals, and Glass Prizes), 10,900/, of which amount 2,033/ are contributions from the Doncaster Local Committee, 2,332/ from various Breed Societies, and 756/ from other sources

CHAMPION PRIZES.

The following Champion Prizes are offered by Breed Societies and others —

HORSES.

SHIRE HORSE SOCIETY :—Two Gold Medals, value 10/ each (or 10/ in money), for the best Shire Stallion and for the best Mare or Filly, and 5/ each to the Breeders of the Champion Shire Stallion, and Mare or Filly

CLYDESDALE HORSE SOCIETY :—Two Prizes of 10/ each for the best Clydesdale Stallion, and for the best Mare or Filly.

SUFFOLK HORSE SOCIETY :—Challenge Cup value 50/, for the best Suffolk Stallion

HUNTERS IMPROVEMENT SOCIETY :—Two Gold Medals for the best Hunter Mare 4 years and upwards, and for the best Filly not exceeding 3 years old

POLO AND RIDING PONY SOCIETY :—Two Gold Medals for the best Polo and Riding Pony Stallion or Colt, and for the best Mare or Filly.

CLEVELAND BAY HORSE SOCIETY :—Two Prizes of 5/ each for the best Cleveland Bay Stallion, and for the best Mare or Filly

YORKSHIRE COACH HORSE SOCIETY :—Two Prizes of 5/ each for the best Yorkshire Coach Horse Stallion, and for the best Mare or Filly

HACKNEY HORSE SOCIETY :—Two Gold Medals, value 10/ each (or 10/ in money), for the best Hackney Stallion, and for the best Mare or Filly.

SHETLAND PONY STUD BOOK SOCIETY :—Silver Medal for the best Shetland Pony.

HUNTER RIDING CLASSES :—A Gold Challenge Cup, value 52/ 10s., for the best Hunter Mare or Gelding in the Riding Classes.

WELSH PONY AND COB SOCIETY :—Two Silver Medals and Certificates for the best Welsh Pony Stallion, and for the best Mare

HACK AND RIDING PONIES :—A Gold Challenge Cup, value 52/ 10s. for the best Hack or Riding Pony

HACKNEY HORSE SOCIETY :—Gold Medal (or 5/ in money) for the best Mare or Gelding in the Single Driving Classes.

HARNESS CLASSES :—A Gold Challenge Cup, value 52/ 10s. for the best Single Harness Mare or Gelding in novice classes

A Gold Challenge Cup, value 52/ 10s., for the best Single Harness Mare or Gelding.

HARNESS CLASSES :—Two Gold Challenge Cups, value 52/ 10s each, (1) for the best Pair, (1) for the best Tandem.

FOUR-IN-HANDS :—A Gold Challenge Cup, value 52/ 10s. for the best Team

CATTLE.

SHORTHORN SOCIETY :—Two Prizes of 20/ each for the best Shorthorn Bull, and for the best Cow or Heifer.

DAIRY SHORTHORN (COATES'S HERD BOOK) ASSOCIATION :—Prize of 10/ for the best Pedigree Shorthorn Dairy Cow or Heifer ; and a Challenge Cup, value 52/ 10s. for the best Pedigree Dairy Shorthorn Group of one Bull and two Cows or Heifers

LINCOLNSHIRE RED SHORTHORN ASSOCIATION :—Two Prizes of 10/ each for the best Shorthorn Bull, and for the best Cow or Heifer

HEREFORD HERD BOOK SOCIETY :—Two Prizes of 10/ 10s each for the best Hereford Bull, and for the best Cow or Heifer.

DEVON CATTLE BREEDERS' SOCIETY :—Two Prizes of 10*l*. 10*s*. each for the best Devon Bull, and for the best Cow or Heifer.

SOUTH DEVONS —A Challenge Cup, value 2*0l*., for the best South Devon animal.

LONGHORN CATTLE SOCIETY :—Two Challenge Cups, value 15*l*. each, for the best Longhorn animal.

SUSSEX HERD BOOK SOCIETY :—Two Silver Medals for the best Sussex Bull, and for the best Cow or Heifer.

RED POLL SOCIETY :—Two Prizes of 5*l*. each for the best Red Poll Bull, and for the best Cow or Heifer.

ABERDEEN ANGUS CATTLE SOCIETY :—A Gold Medal for the best animal of the Aberdeen Angus breed.

ENGLISH ABERDEEN ANGUS CATTLE ASSOCIATION :—A Gold Medal for the best animal of the opposite sex to that of the animal awarded the Gold Medal of the Aberdeen Angus Cattle Society.

ENGLISH JERSEY CATTLE SOCIETY :—Two Prizes of 5*l*. each for the best Jersey Bull, and for the best Cow or Heifer.

ENGLISH KERRY AND DEXTER CATTLE SOCIETY :—Two Challenge Cups, value 26*l*. 5*s*. each, for the best Kerry Bull, Cow, or Heifer, and for the best Dexter Bull, Cow, or Heifer.

ENGLISH JERSEY CATTLE SOCIETY :—Gold Medal (or 10*l*. in money), Silver Medal and Bronze Medal for the three best Jersey Animals in the Butter-test Classes.

SHEEP.

SOUTHDOWN SHEEP SOCIETY :—A Gold Medal (or 10*l*. 10*s*. in money) for the best Southdown Ram; and Silver Medal (or 1*l*. in money) for the best Pen of Ewes or Ewe Lambs.

HAMPSHIRE DOWN SHEEP BREEDERS' ASSOCIATION :—Prize of 10*l*. for the best Hampshire Down Ram Lamb, Pen of Ram Lambs, or Ewe Lambs.

LINCOLN LONG-WOOL SHEEP BREEDERS' ASSOCIATION :—Prize of 5*l*. for the best Lincoln Ram; a Challenge Cup, value 52*l*. 10*s*., for the best Group of one Lincoln Ram and three Ewes.

SOCIETY OF BORDER LEICESTER SHEEP BREEDERS :—A Challenge Cup, value 50*l*., for the best Border Leicester Sheep.

KENT OR ROMNEY MARSH SHEEP BREEDERS' ASSOCIATION :—Prize of 10*l*. 10*s*. for the best Kent or Romney Marsh Ram.

PIGS.

NATIONAL PIG BREEDERS' ASSOCIATION :—Six Gold Medals (or 5*l*. 5*s*. in money) for the best Large White Boar and Sow, Middle White Boar and Sow, and Tamworth Boar and Sow.

BRITISH BERKSHIRE SOCIETY :—Prize of 5*l*. 5*s*. for the best Berkshire Boar or Sow.

LARGE BLACK PIG SOCIETY :—Prize of 10*l*. for the best Large Black Boar; and a Challenge Cup, value twenty guineas, for the best Large Black Sow.

LINCOLNSHIRE CURLY-COATED PIG BREEDERS' ASSOCIATION :—Two Prizes of 5*l*. 5*s*. each, for the best Lincolnshire Curly-coated Boar and the best Sow.

HORSES (£3,726).

SHIRE.	Prizes		
	1st	2nd	3rd
STALLION, foaled in 1911 ¹ . . .	20	10	5
STALLION, foaled in 1910 . . .	20	10	5
STALLION, foaled in 1909 . . .	20	10	5
FILLY, foaled in 1911 ¹ . . .	20	10	5
FILLY, foaled in 1910 . . .	20	10	5
FILLY, foaled in 1909 . . .	20	10	5
MARE, foaled in or after 1908 (with foal at foot) . . .	20	10	5
MARE, foaled in or before 1907 (with foal at foot) . . .	20	10	5
COLT FOAL, produce of mare in above classes . . .	10	5	3
FILLY FOAL, produce of mare in above classes . . .	10	5	3

CLYDESDALE.²

STALLION, foaled in 1911 . . .	20	10	5
STALLION, foaled in 1910 . . .	20	10	5
STALLION, foaled in 1909 . . .	20	10	5
FILLY, foaled in 1911 . . .	20	10	5
FILLY, foaled in 1910 . . .	20	10	5
FILLY, foaled in 1909 . . .	20	10	5
MARE (with foal at foot) . . .	20	10	5
FOAL, produce of mare in above class . . .	10	5	3

SUFFOLK.³

Same as for Clydesdales.

HUNTERS.⁴

BREEDING CLASSES.

COLT OR GELDING, foaled in 1911 . . .	20	10	5
GELDING, foaled in 1910 . . .	20	10	5
GELDING, foaled in 1909 . . .	20	10	5
FILLY, foaled in 1911 . . .	20	10	5
FILLY, foaled in 1910 . . .	20	10	5
FILLY, foaled in 1909 . . .	20	10	5

THOROUGHBRED MARE, entered or eligible for entry in the G.S.B. (with foal at foot), up to weight . . . 20 10 5

Two Prizes of £5 each are also offered in this class: (I.) for the best Colt Foal, and (II.) for the best Filly Foal.

MARE (Novice), foaled in or after 1904 (with foal at foot), up to from 12 to 14 st. . . 20 10 5

MARE (Novice), foaled in or after 1904 (with foal at foot), up to more than 14 st. . . 20 10 5

MARE (with foal at foot), up to from 12 to 14 st. . . 20 10 5

MARE (with foal at foot), up to more than 14 st. . . 20 10 5

COLT FOAL, produce of Mare in above classes . . . 10 5 3

FILLY FOAL, produce of Mare in above classes . . . 10 5 3

POLO AND RIDING

PONIES.⁵

Prizes

1st 2nd 3rd

£ £ £

BREEDING CLASSES.

STALLION, foaled in or before 1909, not over 15 h. . .	15	10	5
COLT, FILLY, OR GELDING, foaled in 1911 . . .	15	10	5
COLT, FILLY, OR GELDING, foaled in 1910 . . .	15	10	5
FILLY OR GELDING, foaled in 1909 . . .	15	10	3
MARE (with foal at foot), not over 14.2 h. . .	15	10	5

CLEVELAND BAY OR COACH HORSE.

STALLION, foaled in or before 1908 . . .	15	10	5
STALLION, foaled in 1909 or 1910 . . .	15	10	5
FILLY OR GELDING, foaled in 1910 . . .	15	10	5
FILLY OR GELDING, foaled in 1909 . . .	15	10	5
MARE (with foal at foot) . . .	15	10	5

HACKNEYS.⁶

BREEDING CLASSES.

STALLION, foaled in 1911 . . .	20	10	5
STALLION, foaled in 1910 . . .	20	10	5
STALLION, foaled in 1909 . . .	20	10	5
FILLY, foaled in 1911 . . .	20	10	5
FILLY, foaled in 1910 . . .	20	10	5
FILLY, foaled in 1909 . . .	20	10	5
MARE (with foal at foot), over 14. and not over 15.2 h. . .	20	10	5
MARE (with foal at foot), over 15.2 h. . .	20	10	5
FOAL, produce of Mare in above classes . . .	10	5	3

HACKNEY PONY.⁷

BREEDING CLASSES.

STALLION, foaled in or before 1908, not over 14 h. . .	15	10	5
COLT, FILLY, OR GELDING, foaled in 1910, not over 13.2 h. . .	15	10	5
FILLY OR GELDING, foaled in 1908, not over 13.3 h. . .	15	10	5
MARE (with foal at foot), not over 14 h. . .	15	10	5

SHETLAND PONY.

STALLION, foaled in or before 1909, not over 10½ h. . .	10	5	3
MARE (with foal at foot), not over 10½ h. . .	10	5	3

WELSH PONY.

(Mountain or Moorland Class).

STALLION, foaled in or before 1909, not over 12 h. . .	10	5	3
MARE (with foal at foot), not over 12 h. . .	10	5	3

¹ Offered by the Shire Horse Society.² £50 provided by the Clydesdale Horse Society.³ £70 provided by the Suffolk Horse Society.⁴ £100 and £50 provided by two members of the R.A.S.E. interested in the breed.⁵ £30 provided by the Polo and Riding Pony Society.⁶ £75 provided by the Hackney Horse Society.

HUNTER RIDING CLASSES.¹

	Prizes				
	1st £	2nd £	3rd £	4th £	5th £
MARE OR GELDING, foaled in 1908, up to from 12 to 14 st.	15	10	5	5	5
MARE OR GELDING, foaled in 1908, up to more than 14 st.	15	10	5	5	5
MARE OR GELDING (Novice), foaled in or before 1907, up to from 12 to 14 st.	15	10	5	5	5
MARE OR GELDING (Novice), foaled in or before 1907, up to more than 14 st.	15	10	5	5	5
MARE OR GELDING, foaled in or before 1908, up to from 12 to 13.7 st.	20	15	10	5	5
MARE OR GELDING, foaled in or before 1908, up to more than 13.7 and not over 15 st.	20	15	10	5	5
MARE OR GELDING, foaled in or before 1908, up to more than 15 st.	20	15	0	5	5

HACK AND RIDING PONY CLASSES.¹

	Prizes		
	1st £	2nd £	3rd £
MARE OR GELDING, Hunter or Polo Type (light-weight), foaled in or before 1908, not exceeding 15 h.	15	10	5
MARE OR GELDING, Hunter or Polo Type (heavy-weight), foaled in or before 1908, not exceeding 15 h.	15	10	5
MARE OR GELDING, Park Hack (light-weight), foaled in or before 1908, exceeding 15 h.	15	10	5
MARE OR GELDING, Park Hack (heavy-weight), foaled in or before 1908, exceeding 15 h.	15	10	5

DRIVING CLASSES.¹

	Prizes			
	1st £	2nd £	3rd £	4th £
<i>To be driven in Single Harness</i>				
MARE OR GELDING (Novice), not over 14 h.	15	10	5	5
MARE OR GELDING (Novice), over 14 and not over 15 h.	15	10	5	5
MARE OR GELDING (Novice), over 15 h.	15	10	5	5
MARE OR GELDING, not over 14 h.	15	10	5	5
MARE OR GELDING, over 14 and not over 15 h.	15	10	5	5
MARE OR GELDING, over 15 and not over 15.2 h.	15	10	5	5
MARE OR GELDING, over 15.2 h.	15	10	5	5
<i>To be driven in Double Harness</i>				
MARES OR GELDINGS, not over 15 h.	15	10	5	5
MARES OR GELDINGS, over 15 h.	15	10	5	5

DRIVING CLASSES.¹

	Prizes			
	1st £	2nd £	3rd £	4th £
<i>To be driven Tandem</i>				
MARES OR GELDINGS, not over 15 h.	15	10	5	5
MARES OR GELDINGS, over 15 h.	15	10	5	5
<i>Four-in-hand Teams</i>				
MARES OR GELDINGS, to be shown before a Coach	20	15	10	5

PIT PONIES.¹

TWO PONIES, not exceeding 13 hands.	10	5	3	-
TWO PONIES, over 13 and not exceeding 14 hands.	10	5	3	-
A SPECIAL PRIZE of 5/ for the best Four Ponies.				

JUMPING

	Prizes				
	1st £	2nd £	3rd £	4th £	5th £
A MARE OR GELDING	25	10	5	5	5
B MARE OR GELDING (First Prize Winners in Class A not eligible)	20	10	5	5	5
C MARE OR GELDING (First Prize Winners in Classes A and B not eligible)	15	10	5	5	5
D CHAMPION CLASS, Mare or Gelding	25	15	10	5	5

CATTLE (£2,770).

SHORTHORN.

	Prizes		
	1st £	2nd £	3rd £
BULL, calved in 1907, 1908 or 1909	10	6	4
BULL, calved on or between Jan 1 1910 and March 31 1910	10	6	4
BULL, calved on or between April 1, 1910, and Dec 31, 1910 ²	10	6	4
BULL, calved on or between Jan 1, 1911, and March 31, 1911	10	6	4
BULL, calved on or between April 1, 1911, and Dec 31, 1911 ²	10	6	4
TWO SPECIAL PRIZES of 10/ and 5/ for the two best Bulls calved in 1911, the property of an Exhibitor residing in Yorkshire ³ .			
GROUP CLASS, for the best collection of either three or four Bulls, bred by Exhibitor ²	15	10	
COW, in-milk, calved in or before 1908	10	6	4
HEIFER in-milk, calved in 1908	10	6	4
HEIFER, calved on or between Jan 1, 1910, and March 31, 1910	10	6	4
HEIFER, calved on or between April 1, 1910, and Dec 31, 1910 ²	10	6	4
HEIFER, calved on or between Jan 1, 1911, and March 31, 1911	10	6	4
HEIFER, calved on or between April 1, 1911, and Dec 31, 1911	10	6	4
GROUP CLASS, for the best collection of either three or four Cows or Heifers, bred by Exhibitor	15	10	

¹ Provided by the Doncaster Local Committee.

² Offered by the Shorthorn Society.

³ £5 offered by the Yorkshire Agricultural Society.

Prize List for Doncaster Show, 1912.

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DAIRY SHORTHORN.

	Prizes		
	1st	2nd	3rd
	£	£	£
BULL, calved in 1911	10	6	4
DAIRY COW, in-milk, calved in or before 1907 ²	10	6	4
DAIRY COW, in-milk, calved in 1908	10	6	4
DAIRY HEIFER, in-milk, calved in or after 1909	10	6	4
Milk Yield Prizes	10	6	4

LINCOLNSHIRE RED SHORTHORN.³

BULL, calved in 1906, 1907, 1908, or 1909	10	6	4
BULL, calved in 1910	10	6	4
BULL, calved in 1911	10	6	4
COW, in-milk, calved in or before 1908	10	6	4
HEIFER, in-milk, calved in 1909	10	6	4
HEIFER, calved in 1910	10	6	4
HEIFER, calved in 1911	10	6	4
COW OR HEIFER, in-milk, calved in or before 1909, showing the best milking properties	10	6	4
Milk Yield Prizes	10	6	4

HEREFORD.⁴

BULL, calved in 1907, 1908, or 1909	10	6	4
BULL, calved in 1910	10	6	4
BULL, calved in Jan. or Feb., 1911	10	6	4
BULL, calved on or after March 1, 1911	10	6	4
COW, in-milk, calved in or before 1908	10	6	4
HEIFER, in-milk, calved in 1909	10	6	4
HEIFER, calved in 1910	10	6	4
HEIFER, calved in 1911	10	6	4

DEVON.⁵

BULL, calved in 1907, 1908, or 1909	10	6	4
BULL, calved in 1910	10	6	4
BULL, calved in 1911	10	6	4
COW OR HEIFER, in-milk, calved in or before 1909	10	6	4
HEIFER, calved in 1910	10	6	4
HEIFER, calved in 1911	10	6	4
DAIRY COW, in-milk, calved in or before 1909	10	6	4
Milk Yield Prizes	10	6	4

SOUTH DEVON.⁶

BULL, calved in 1907, 1908, 1909, or 1910	10	6	-
BULL, calved in 1911	10	6	-
COW OR HEIFER, in-milk, calved in or before 1909	10	6	-
HEIFER, calved in 1910	10	6	-
HEIFER, calved in 1911	10	6	-
Milk Yield Prizes	10	6	4

LONGHORN.⁷

	Prizes		
	1st	2nd	3rd
	£	£	£
BULL, calved in 1907, 1908, 1909, or 1910	10	6	4
BULL, calved in 1911	10	6	4
COW OR HEIFER, in-milk, calved in or before 1909	10	6	4
HEIFER, calved in 1910 or 1911	10	6	4
Milk Yield Prizes	10	6	4

SUSSEX.

BULL, calved in 1907, 1908, or 1910	10	6	4
BULL, calved in 1910 ⁸	10	6	4
BULL, calved in 1911	10	6	4
COW OR HEIFER, in-milk, calved in or before 1908	10	6	4
HEIFER, calved in 1909	10	6	4
HEIFER, calved in 1910	10	6	4

WELSH.⁹

BULL, calved on or after Dec. 1, 1906, and before Dec. 1, 1910	10	6	-
BULL, calved on or after Dec. 1, 1910, and before Dec. 1, 1911	10	6	-
COW OR HEIFER, in-milk, calved before Dec. 1, 1909	10	6	-
HEIFER, calved on or after Dec. 1, 1909, and before Dec. 1, 1911	10	6	-

RED POLL.¹⁰

BULL, calved in 1907, 1908, 1909, or 1910	10	6	4
BULL, calved in 1911	10	6	4
COW OR HEIFER, in-milk, calved in or before 1909	10	6	4
HEIFER, calved in 1910	10	6	4
HEIFER, calved in 1911	10	6	4
Milk Yield Prizes	10	6	4

ABERDEEN ANGUS.¹¹

BULL, calved on or after Dec. 1, 1908, and before Dec. 1, 1909	10	6	4
BULL, calved on or after Dec. 1, 1909, and before Dec. 1, 1910	10	6	4
BULL, calved on or after Dec. 1, 1910, and before Dec. 1, 1911	10	6	4
COW OR HEIFER, in-milk, calved in or before Dec. 1, 1909	10	6	4
HEIFER, calved on or after Dec. 1, 1909, and before Dec. 1, 1910	10	6	4
HEIFER, calved on or after Dec. 1, 1910, and before Dec. 1, 1911	10	6	4

GALLOWAY.¹²

BULL, calved on or after Dec. 1, 1908, and before Dec. 1, 1910	10	6	4
BULL, calved on or after Dec. 1, 1910, and before Dec. 1, 1911	10	6	4
COW OR HEIFER, in-milk, calved before Dec. 1, 1909	10	6	4
HEIFER, calved on or after Dec. 1, 1909, and before Dec. 1, 1910	10	6	4
HEIFER, calved on or after Dec. 1, 1910, and before Dec. 1, 1911	10	6	4

¹ Offered by the Dairy Shorthorn (Cottee's Herd Book) Association.

² Offered by the Shorthorn Society.

³ £80 provided by the Lincolnshire Red Shorthorn Association.

⁴ £50 provided by the Hereford Herd Book Society.

⁵ £50 provided by the Devon Cattle Breeders' Society.

⁶ £20 provided by the South Devon Herd Book Society.

⁷ £20 provided by the Longhorn Cattle Society.

⁸ Offered by the Sussex Herd Book Society.

⁹ £10 10s. provided by the Welsh Black Cattle Society.

¹⁰ £20 provided by the Red Poll Society.

¹¹ £20 provided by the Aberdeen Angus Cattle Society.

¹² £20 provided by the Galloway Cattle Society.

	Prizes		
	1st	2nd	3rd
HIGHLAND.	£	£	£
BULL, calved in or before 1911	10	-	-
COW OR HEIFER, in-milk	10	-	-

AYRSHIRE.¹			
BULL, calved in or before 1911	10	6	4
COW OR HEIFER, in-milk	10	6	4
COW OR HEIFER, in-calf	10	6	4
Milk Yield Prizes	10	6	4

BRITISH HOLSTEIN.²			
BULL, calved in or before 1909	10	6	4
BULL, calved in 1910 or 1911	10	6	4
COW, in-milk, calved in or before 1908	10	6	4
HEIFER, in-milk, calved in 1909 or 1910	10	6	4
Milk Yield Prizes	10	6	4

JERSEY.³			
BULL, calved 1907, 1908, or 1909	10	6	4
BULL, calved in 1910	10	6	4
BULL, calved in 1911	10	6	4
COW, in-milk, calved in or before 1908	10	6	4
HEIFER, in-milk, calved in 1909	10	6	4
HEIFER, in-milk, calved in 1910	10	6	4
HEIFER, calved in 1911	10	6	4
COW OR HEIFER, in-milk, bred by Exhibitor, sired in Great Britain or Ireland	10	6	4
Milk Yield Prizes	10	6	4

GUERNSEY.⁴			
BULL, calved in 1907, 1908, 1909, or 1910	10	6	4
BULL, calved in 1911	10	6	4
COW, in-milk, calved in or before 1907	10	6	4
COW OR HEIFER, in-milk, calved in 1908 or 1909	10	6	4
HEIFER, calved in 1910	10	6	4
HEIFER, calved in 1911	10	6	4
Milk Yield Prizes	10	6	4

KERRY.⁵			
BULL, calved in 1907, 1908, 1909, or 1910	10	6	4
COW, in-milk, calved in or before 1908	10	6	4
HEIFER, in-milk, calved in 1909	10	6	4
HEIFER, calved in 1910 or 1911	10	6	4
Milk Yield Prizes	10	6	4

DEXTER.⁶			
Same as for Kerry's.			

DAIRY CATTLE.⁷			
(Any Age, Breed, or Cross.)			
	1st	2nd	3rd
	£	£	£
DAIRY COW, in-milk	10	6	4
PAIR OF DAIRY COWS, in-milk	10	6	4
DAIRY COW, in-milk, that has been subjected to the Tuberculin Test within eight weeks of the Show, by a Fellow or Member of the Royal College of Veterinary Surgeons, and has not reacted	10	6	4

BUTTER TESTS.⁷			
Cow, exceeding 900 lb. live weight	15	10	5
Cow, not exceeding 900 lb. live weight	15	10	5

SHEEP (£1,825 10s.).			
OXFORD DOWN.			
	1st	2nd	3rd
	£	£	£
SHEARLING RAM	10	5	3
RAM LAMB	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

SHROPSHIRE.⁸			
	1st	2nd	3rd
	£	£	£
TWO-SHEAR RAM	10	5	3
SHEARLING RAM	10	5	3
FIVE SHEARLING RAMS	15	10	5
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

SOUTHDOWN.			
	1st	2nd	3rd
	£	£	£
TWO-SHEAR RAM ¹⁰	10	5	3
SHEARLING RAM	10	5	3
THREE SHEARLING RAMS ¹⁰	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

HAMPSHIRE DOWN.			
	1st	2nd	3rd
	£	£	£
TWO-SHEAR RAM ¹¹	10	5	-
SHEARLING RAM	10	5	3
RAM LAMB ¹¹	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

SUFFOLK.			
	1st	2nd	3rd
	£	£	£
TWO-SHEAR RAM ¹²	10	5	3
SHEARLING RAM	10	5	3
RAM LAMB ¹²	10	5	3
THREE RAM LAMBS	10	5	3
THREE SHEARLING EWES	10	5	3
THREE EWE LAMBS	10	5	3

- ¹ £20 provided by the Ayrshire Cattle Herd Book Society.
- ² £30 provided by the British Holstein Cattle Society.
- ³ £30 provided by the English Jersey Cattle Society.
- ⁴ £40 provided by the English Guernsey Cattle Society.
- ⁵ £30 provided by the English Kerry and Dexter Cattle Society.
- ⁶ Offered by the Doncaster Local Committee.
- ⁷ Offered by the English Jersey Cattle Society.
- ⁸ Offered by the Oxford Down Sheep Breeders' Association.
- ⁹ £45 provided by the Shropshire Sheep Breeders' Association.
- ¹⁰ Offered by the Southdown Sheep Society.
- ¹¹ Offered by the Hampshire Down Sheep Breeders' Association.
- ¹² Offered by the Suffolk Sheep Society.

Prize List for Doncaster Show, 1912.

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	Prizes		
	1st	2nd	3rd
DORSET DOWN.¹	£	£	£
SHEARLING RAM . . .	10	5	-
THREE RAM LAMBS . . .	10	5	-
THREE SHEARLING EWES . . .	10	5	-

DORSET HORN.²			
SHEARLING RAM, dropped after Nov. 1, 1910 . . .	10	5	3
THREE RAM LAMBS, dropped after Nov. 1, 1911 . . .	10	5	3
THREE SHEARLING EWES, dropped after Nov. 1, 1910 . . .	10	5	3
THREE EWE LAMBS, dropped after Nov. 1, 1911 . . .	10	5	3

RYELAND.³			
RAM, TWO SHEAR and upwards . . .	10	5	3
SHEARLING RAM . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3

KERRY HILL (WALES).			
RAM, SHEARLING and upwards . . .	10	-	-
THREE SHEARLING EWES . . .	10	-	-

LINCOLN.⁴			
TWO-SHEAR RAM . . .	10	5	3
SHEARLING RAM . . .	10	5	3
FIVE SHEARLING RAMS . . .	15	10	5
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3
THREE YEARLING EWES, shown in their wool . . .	10	5	3

LEICESTER.⁵			
SHEARLING RAM . . .	10	5	3
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3

BORDER LEICESTER.⁶			
RAM, TWO SHEAR and upwards . . .	10	5	3
SHEARLING RAM . . .	10	5	3
SHEARLING EWE . . .	10	5	3

WENSLEYDALE.⁷			
RAM, TWO-SHEAR and upwards . . .	10	5	3
SHEARLING RAM . . .	10	5	3
THREE SHEARLING RAMS . . .	10	5	3
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
YEARLING EWE, shown in wool . . .	10	5	3

LONK.⁸			
RAM, SHEARLING and upwards . . .	10	5	-
THREE SHEARLING EWES . . .	10	5	-

DERBYSHIRE GRITSTONE.

Same as for Kerry Hill

	Prizes		
	1st	2nd	3rd
KENT OR ROMNEY MARSH.⁹	£	£	£
TWO-SHEAR RAM . . .	10	5	3
SHEARLING RAM . . .	10	5	3
FIVE SHEARLING RAMS . . .	15	10	5
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3

COTSWOLD.¹⁰			
SHEARLING RAM . . .	10	5	3
THREE RAM LAMBS . . .	10	5	3
THREE SHEARLING EWES . . .	10	5	3
THREE EWE LAMBS . . .	10	5	3

DEVON LONG-WOOL.¹¹			
RAM, TWO-SHEAR and upwards . . .	10	5	-
SHEARLING RAM . . .	10	5	-
THREE SHEARLING EWES . . .	10	5	-

SOUTH DEVON.¹²			
TWO-SHEAR RAM . . .	10	5	-
SHEARLING RAM . . .	10	5	-
THREE RAM LAMBS . . .	10	5	-
THREE SHEARLING EWES . . .	10	5	-
THREE EWE LAMBS . . .	10	5	-

DARTMOOR.
Same as for Kerry Hill.

EXMOOR.¹³
Same as for Ryelands

CHEVIOT.¹⁴
Same as for Border Leicesters

HERDWICK.¹⁵			
RAM, TWO SHEAR and upwards . . .	10	5	-
SHEARLING RAM . . .	10	5	-
THREE SHEARLING EWES . . .	10	5	-

WELSH MOUNTAIN.
Same as for Kerry Hill

BLACK-FACED MOUNTAIN.
Same as for Kerry Hill.

- ¹ £15 provided by the Dorset Down Sheep Breeders' Association.
- ² £15 provided by the Dorset Horn Sheep Breeders' Association.
- ³ £18 provided by the Ryeland Flock Book Society.
- ⁴ £36 provided by the Lincoln Long-Wool Sheep Breeders' Association.
- ⁵ £20 provided by the Leicester Sheep Breeders' Association.
- ⁶ £18 provided by the Society of Border Leicester Sheep Breeders.
- ⁷ £18 provided by the Wensleydale Blue-faced Sheep Breeders' Association, £18 provided by the Wensleydale Long-Wool Sheep Breeders' Association.
- ⁸ £5 provided by the Lonk Sheep Breeders' Association.
- ⁹ £18 provided by the Kent or Romney Marsh Sheep Breeders' Association.
- ¹⁰ £18 provided by the Cotswold Sheep Society.
- ¹¹ £15 provided by the Devon Long-Woolled Sheep Breeders' Society.
- ¹² £30 provided by the South Devon Flock Book Association.
- ¹³ £18 provided by the Exmoor Horn Sheep Breeders' Society.
- ¹⁴ £18 provided by Breeders of Cheviot Sheep.
- ¹⁵ £15 provided by Breeders of Herdwick Sheep.

PIGS (£762 5s.).

Large White ¹) For Trials see below
Middle White ¹	.	.	.	.	.
Tamworth ¹	.	.	.	.	.
Berkshire	.	.	.	.	.
Large Black ²	.	.	.	.	.
Lincolnshire Curly-Coated ⁴	

In each of the above Breeds the following prizes will be given—

	1st	2nd	3rd
BOAR, farrowed in 1908, 1909, or 1910	£ 10	£ 5	£ 3
BOAR, farrowed in 1911	10	5	3
BOAR, farrowed in 1912	10	5	3
BREEDING SOW, farrowed in 1908, 1909, or 1910	10	5	3
SOW, farrowed in 1911	10	5	3
THREE SOW PIGS, farrowed in 1912	10	5	3

POULTRY (£400).

Prizes of 30s., 20s. and 10s. are offered in each class for the best COCK, HEN, COCKEREL, and PULLET of the following Breeds:—

Game, Old English.
Game, Indian.
Game, Modern.
Game, Black Sumatra.
Langshan.
Plymouth Rock, Barred.
Plymouth Rock, any other colour.
Wyandotte, Gold or Silver Laced.
Wyandotte, White.
Wyandotte, Black.
Wyandotte, Partridge.
Wyandotte, Columbian.
Wyandotte, Spangled.
Wyandotte, Blue.
Wyandotte, any other variety
Orpington, Buff.

A PIECE OF PLATE, value 2l. 2s., for the best Buff Orpington⁵

Orpington, White.
Orpington, Black.
Orpington, Spangled.
Orpington, any other colour.
Minorca.
Leghorn, White.
Leghorn, Brown.
Leghorn, Black.
Leghorn, any other colour.
Dorking.
Sussex, Red.
Sussex, Light.
Sussex, Speckled.

THREE SERVIETTE RINGS: (1) for best Red, (2) for best Light, (3) for best Speckled Sussex.⁶

British Rhode Island, Red.
Ancona.
Yokohama.
Brahma.
Cochin.

¹ £72 provided by the National Pig Breeders' Association.

² £18 provided by the British Berkshire Society.

³ £18 provided by the Large Black Pig Society.

⁴ £18 provided by the Lincolnshire Curly-Coated Pig Breeders' Association.

⁵ Offered by the Buff Orpington Club.

⁶ Offered by the Sussex Poultry Club.

⁷ Offered by the Mahnes Poultry Club.

⁸ Offered by the Campine Club.

POULTRY continued

Mahne

TWO SILVER MEDALS (1) for best Coucou d. Mahne, (2) for any other variety of Mahne.

Campine.

SILVER MEDAL for best Campine⁸

Faverolle.

Houdan.

Any other Breed.

Bantams, Old English Game.

Bantams, Modern Game

Bantams, Sebright.

Bantams, Wyandotte

Bantams, Yokohama.

Bantams, any other variety.

DUCKS.

DRAKE OR YOUNG DRAKE,
DUCK OR DUCKLING

Aylesbury.

Rouen.

Blue Orpington.

Any other breed.

GEESE.

GANDER AND GOOSE.

Any variety.

• TURKEYS.

Cock.

Hen.

PRODUCE (£294 10s.).

BUTTER.

Box of Twelve 2 lb. Rolls or Squares of BUTTER, not more than 1 per cent salt.
1st 4l., 2nd 2l., 3rd 1l.

	Pounds		
	1st	2nd	3rd
TWO POUNDS OF FRESH BUTTER, without any salt, made up in plain pounds, from the milk of Channel Island, Devon, or South Devon Cattle and their crosses	2	1	10
TWO POUNDS OF FRESH BUTTER, without any salt, made up in plain pounds, from the milk of Cattle of any breed or cross other than those mentioned	2	1	10
TWO POUNDS OF FRESH BUTTER, slightly salted, made up in plain pounds, from the milk of Channel Island, Devon, or South Devon Cattle and their crosses	2	1	10
TWO POUNDS OF FRESH BUTTER, slightly salted, made up in plain pounds, from the milk of Cattle of any breed or cross other than those mentioned	2	1	10

BUTTER—continued

	Prizes		
	1st	2nd	3rd
	£	£	£
THREE POUNDS OF FRESH BUTTER, slightly salted, made up in pounds in the most attractive marketable designs and packed in non-returnable boxes for transmission by rail or parcel post	2	1	10

CHEESE (made in 1912).

3 Cheeses in each Entry.

	£	£	£
THREE CHEDDAR, not less than 50 lb. each	5	3	2
THREE CHEDDAR TRUCKLES	4	2	1
THREE CHESHIRE (coloured), of not less than 40 lb. each	5	3	2
THREE CHESHIRE (uncoloured), of not less than 40 lb. each	5	3	2
THREE DOUBLE GLOUCESTER, not less than 22 lb. each	5	3	2
THREE LANCASHIRE, not over 12 lb. each	4	2	1
THREE STILTON	4	2	1
THREE WENSLEYDALE (Stilton shape)	3	2	1
THREE WENSLEYDALE or COTHERSTONE (Stilton shape)	4	2	1
THREE WENSLEYDALE or COTHERSTONE (Flat shape)	4	2	1
THREE CLEVELAND	4	2	1

BREAD

(Made from Stone-Ground Flour from British Wheat).

TWO LOAVES, weighing 2 lb. each or thereabouts, baked in tin, Open to Professional Bakers only	3	2	1
TWO LOAVES, weighing 2 lb. each or thereabouts, of any shape, Open to Professional Bakers only	3	2	1
TWO LOAVES, weighing 2 lb. each or thereabouts, baked in tins, Professional Bakers not eligible for this class	3	2	1
TWO LOAVES, weighing 2 lb. each or thereabouts, of any shape, Professional Bakers not eligible for this class	3	2	1
CHAMPION SILVER CUP, value Ten Guineas, for the best exhibit			

CIDER AND PERRY.

Cask of DRY CIDER, made in 1911	4	2	1
Cask of SWEET CIDER, made in 1911	4	2	1
Cask of CIDER, made previous to 1911	4	2	1
ONE DOZ. DRY CIDER, made in 1911	4	2	1
ONE DOZ. SWEET CIDER, made in 1911	4	2	1
ONE DOZ. CIDER, made previous to 1911	4	2	1
ONE DOZ. DRY PERRY	4	2	1
ONE DOZ. SWEET PERRY	4	2	1
A CHALLENGE CUP for the best exhibit of Cider.			

1 Offered by Cider Growers of the West of England.

WOOL (of 1912 Clip).

	Prizes		
	1st	2nd	3rd
	£	£	£
THREE FLEECES, any LONG WOOL	5	3	2
THREE FLEECES, any SHORT WOOL	5	3	2
THREE FLEECES, MOUNTAIN or MOORLAND (comprising Dartmoor, Exmoor, Herdwick, Welsh and Black-faced Mountain)	5	3	2

HIVES, HONEY, AND BEE APPLIANCES.

	s.	s.	s.
Collection of HIVES	80	40	20
FRAME HIVE	20	15	10
Do. for Cottagers' use	20	15	10
HONEY EXTRACTOR	15	10	-
OBSERVATORY HIVE (not less than 3 frames)	20	15	10
USEFUL APPLIANCES	10	-	-

HONEY—(Local Classes).

Open to members of Yorkshire Bee Keepers' Association only.

	s.	s.	
4 Sections of COMB HONEY, about 4 lb.	10	7 6	Cert. of Merit.
RUN OR EXTRACTED, LIGHT-COLOURED HONEY, about 4 lb.	10	7 6	Cert. of Merit.
Collective Exhibit of COMB HONEY; RUN OR EXTRACTED, LIGHT-COLOURED HONEY; and 1 lb. of WAX	20	10	Cert. of Merit.

HONEY—(Open Competition)

For the purposes of Classes for Honey the United Kingdom has been divided into two Districts:—

- Counties of Cheshire, Cumberland, Derby, Durham, Hereford, Lancashire, Leicester, Lincoln, Monmouth, Northumberland, Nottingham, Rutland, Salop, Stafford, Warwick, Westmorland, Worcester, Yorkshire, the Isle of Man, Ireland, Scotland, or Wales
- Counties of Bedford, Berks, Bucks, Cambridge, Cornwall, Devon, Dorset, Essex, Gloucester, Hampshire, Herts, Hunts, Isle of Wight, Kent, Middlesex, Norfolk, Northampton, Oxford, Somerset, Suffolk, Surrey, Sussex, or Wiltshire.

For each of the above Districts the following four Classes and Prizes, for Honey of any year, have been provided:—

	Prizes		
	1st	2nd	3rd
	£	£	£
12 Sections of COMB HONEY, s. about 12 lb.	20	15	10
RUN OR EXTRACTED, LIGHT-COLOURED HONEY, about 12 lb.	20	15	10
RUN OR EXTRACTED, MEDIUM OR DARK-COLOURED HONEY, about 12 lb.	20	15	10
GRANULATED HONEY, about 12 lb.	20	15	10

MISCELLANEOUS.	Prizes			MISCELLANEOUS— <i>continued</i>	Prizes		
	1st	2nd	3rd		1st	2nd	3rd
Shallow frames of COMB				2lb. of WAX .	.10	7	5
HONEY, for extracting .	20	15	10	3lb. of WAX, in marketable form, suitable for retail trade .	.10	7/6	5
Jars of HEATHER HONEY, about 6lb .	20	15	10	HONEY VINEGAR, 1 quart .	.7	6	5
Jars of HEATHER MIXTURE				MEAD, 1 quart .	.7	6	5
EXTRACTED HONEY, about 6lb .	20	15	10	OTHER PRACTICAL EXHIBITS .	10	-	-
DISPLAY OF HONEY .	30	20	10	OTHER SCIENTIFIC EXHIBITS .	10	-	-

HORSE-SHOEING COMPETITIONS (£81).

(Open to the United Kingdom.)

CLASS I. Hunters. CLASS II. Roadsters. CLASS III. Cart Horses.

Prizes in each Class as follows—1st, 5l; 2nd, 3l. 10s; 3rd, 2l. 10s., 4th, 2l. 5th, 1l 10s. 8th, 1l.

A Gold Medal will be presented to the First Prize Winner in each Class.

A Silver Medal and a Bronze Medal in each Class to be competed for by Members of the National Master Farriers' Association.²

BUTTER-MAKING COMPETITIONS (£46).

The Competitions will be open only to those resident in the Counties of Northumberland, Durham, Cumberland, Westmorland, York, Nottingham, and Lincoln, who have been pupils or received instruction in Dairying at their respective County Council Institutes or Dairy Schools since the 1st day of January, 1908, and who have not previous to the 31st of May, 1912, won a Prize in an open class at the Shows of the R.A.S.E., Bath and West and Southern Counties Society, Royal Counties Society, or at the London Dairy Show.

The following Prizes are offered on each day:—1st Prize, 5l; 2nd Prize, 3l; 3rd Prize, 2l; 4th Prize, 1l; 5th Prize, 10s. Certificates of Merit will be given to those candidates obtaining 86 points out of a possible 100.

FARM PRIZES (£485).¹

(Open to bona-fide Tenant Farmers.)

The following Prizes are offered by the Doncaster Local Committee for the best-managed Farms in Yorkshire.

CLASS I.—Farm, chiefly Arable, of 200 acres or over, exclusive of Fell or Tidal Marsh Land. 1st Prize, 100l; 2nd Prize, 50l.

CLASS II.—Farm, chiefly Arable, of not less than 50 acres and under 200 acres, exclusive of Fell or Tidal Marsh Land. 1st Prize, 50l; 2nd Prize, 25l.

CLASS III.—Stock or Dairy Farm, of 200 acres or over, exclusive of Fell or Tidal Marsh Land. 1st Prize, 100l; 2nd Prize, 50l.

CLASS IV.—Stock or Dairy Farm of not less than 50 acres and under 200 acres, exclusive of Fell or Tidal Marsh Land. 1st Prize, 50l; 2nd Prize, 25l.

CLASS V.—Farm, chiefly Arable, of not less than 10 acres and under 50 acres. 1st prize, 20l; 2nd Prize, 10l; 3rd Prize, 5l.

HORTICULTURAL EXHIBITION.¹

Prizes amounting to 350l.

SHEEP DOG TRIALS³

Will be held in the Showyard on Saturday, July 6.

Prizes amounting in all to 21l

DOG SHOW.

The National Terrier Club's Show will be held on July 1 and 2

¹ Offered by the Worshipful Company of Farmers.

² Offered by the National Master Farriers' Association

³ Offered by the Doncaster Local Committee.

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The Society holds every year an Exhibition of Live Stock, Farm Produce, and Implements, to which, and to the Grand Stands at the Horse Ring, Dairy, and elsewhere, Members are entitled to free admission.

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